

September 18, 2017

Melanie A. Bachman, Esq.  
Executive Director/Staff Attorney  
Connecticut Siting Council  
10 Franklin Square  
New Britain, CT 06051

Re: **Notice of Exempt Modification – Facility Modification  
171 Short Beach, Branford, Connecticut**

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains twelve (12) wireless telecommunications antennas at the 100-foot level of the existing 119-foot tower at 171 Short Beach Road in Branford (the “Property”). The tower is owned American Tower Corporation (“ATC”). Cellco’s use of the tower was approved by the Council in 2012 (Docket No. 427). Cellco now intends to modify its facility by replacing six (6) of its existing antennas with three (3) model SBNHH-1D65B, 1900 MHz antennas and three (3) model SBNHH-1D65B, 2100 MHz antennas, at the same 100-foot level on the tower. Cellco also intends to replace three (3) remote radio heads (“RRHs”) with three (3) newer model RRHs behind its 700 MHz antennas. Included in Attachment 1 are specifications for Cellco’s replacement antennas and RRHs.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to James B. Cosgrove, First Selectman for the Town of Branford; Harry Smith, Branford’s Town Planner; 171 Short Beach Road Realty LLC, the owner of the Property; and ATC, the tower owner.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco’s replacement antennas and RRHs will be installed on its existing antenna platform at the 100-foot level of the tower.

# Robinson+Cole

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2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative General Power Density table for Cellco's modified facility is included behind Attachment 2.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support Cellco's proposed modifications. (See Structural Analysis Report included in Attachment 3).

A copy of the parcel map and property owner information is included in Attachment 4. A Certificate of Mailing verifying that this filing was sent to municipal officials and the owner of the property is included in Attachment 5.

For the foregoing reasons, Cellco respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,



Kenneth C. Baldwin

Enclosures

Copy to:

James B. Cosgrove, Branford First Selectman  
Harry Smith, Branford Town Planner  
171 Short Beach Road Realty LLC  
American Tower Corporation  
Tim Parks

# **ATTACHMENT 1**



## SBNHH-1D65B

**6-port sector antenna, 2x 698–896 and 4x 1695–2360 MHz, 65° HPBW, 2x RET. Both high bands share the same electrical tilt.**

- Interleaved dipole technology providing for attractive, low wind load mechanical package

### Electrical Specifications

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain, dBi	14.9	14.7	17.7	18.2	18.6	18.6
Beamwidth, Horizontal, degrees	68	66	69	66	63	58
Beamwidth, Vertical, degrees	12.1	10.7	5.6	5.2	5.0	4.5
Beam Tilt, degrees	0–14	0–14	0–7	0–7	0–7	0–7
USLS (First Lobe), dB	14	13	15	15	15	13
Front-to-Back Ratio at 180°, dB	27	29	28	28	28	27
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	30	30	30	30	30	30
VSWR   Return Loss, dB	1.5   14.0	1.5   14.0	1.5   14.0	1.5   14.0	1.5   14.0	1.5   14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350	350	350	300
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

### Electrical Specifications, BASTA\*

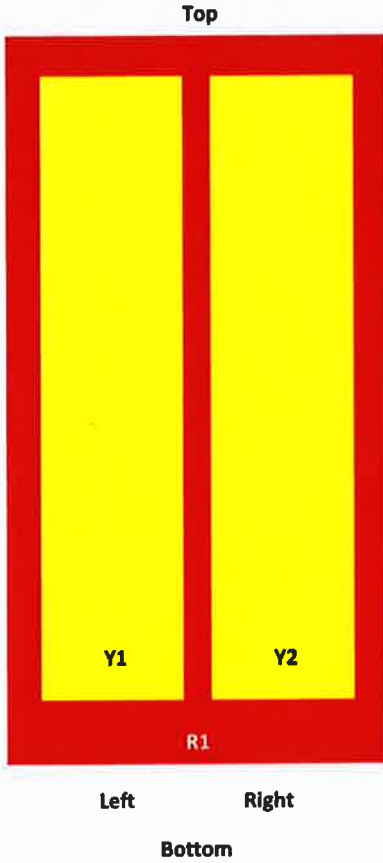
Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain by all Beam Tilts, average, dBi	14.5	14.3	17.4	17.9	18.2	18.3
Gain by all Beam Tilts Tolerance, dB	±0.5	±0.8	±0.4	±0.3	±0.5	±0.3
Gain by Beam Tilt, average, dBi	0°   14.6	0°   14.5	0°   17.4	0°   17.8	0°   18.1	0°   18.2
	7°   14.6	7°   14.4	3°   17.5	3°   17.9	3°   18.3	3°   18.4
	14°   14.2	14°   13.6	7°   17.4	7°   17.9	7°   18.2	7°   18.4
Beamwidth, Horizontal Tolerance, degrees	±2.2	±3.4	±2	±4.6	±5.7	±4.3
Beamwidth, Vertical Tolerance, degrees	±0.8	±1	±0.3	±0.2	±0.3	±0.2
USLS, beampeak to 20° above beampeak, dB	16	14	16	16	16	15
Front-to-Back Total Power at 180° ± 30°, dB	25	26	27	26	26	26
CPR at Boresight, dB	22	23	21	20	20	22
CPR at Sector, dB	13	11	16	12	11	4

\* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, [download the whitepaper Time to Raise the Bar on BSAs.](#)

### Array Layout

SBNHH-1D65B

**SBNHH 65**



Array	Freq (MHz)	Conns	RET (MRET)	AISG RET UID
R1	698-896	1-2	1	ANXXXXXXXXXXXXXXXXX.1
Y1	1695-2360	3-4	2	ANXXXXXXXXXXXXXXXXX.2
Y2	1695-2360	5-6		

View from the front of the antenna  
 (Sizes of colored boxes are not true depictions of array sizes)

## General Specifications

Operating Frequency Band	1695 – 2360 MHz   698 – 896 MHz
Antenna Type	Sector
Band	Multiband
Performance Note	Outdoor usage

## Mechanical Specifications

RF Connector Quantity, total	6
RF Connector Quantity, low band	2
RF Connector Quantity, high band	4
RF Connector Interface	7-16 DIN Female

SBNHH-1D65B

Color	Light gray
Grounding Type	RF connector inner conductor and body grounded to reflector and mounting bracket
Radiator Material	Aluminum   Low loss circuit board
Radome Material	Fiberglass, UV resistant
Reflector Material	Aluminum
RF Connector Location	Bottom
Wind Loading, frontal	618.0 N @ 150 km/h 138.9 lbf @ 150 km/h
Wind Loading, lateral	197.0 N @ 150 km/h 44.3 lbf @ 150 km/h
Wind Loading, rear	728.0 N @ 150 km/h 163.7 lbf @ 150 km/h
Wind Speed, maximum	241 km/h   150 mph

## Dimensions

Length	1851.0 mm   72.9 in
Width	301.0 mm   11.9 in
Depth	180.0 mm   7.1 in
Net Weight, without mounting kit	18.4 kg   40.6 lb

## Remote Electrical Tilt (RET) Information

Input Voltage	10–30 Vdc
Internal RET	High band (1)   Low band (1)
Power Consumption, idle state, maximum	2.0 W
Power Consumption, normal conditions, maximum	13.0 W
Protocol	3GPP/AISG 2.0 (Multi-RET)
RET Interface	8-pin DIN Female   8-pin DIN Male
RET Interface, quantity	1 female   1 male

## Packed Dimensions

Length	2025.0 mm   79.7 in
Width	390.0 mm   15.4 in
Depth	296.0 mm   11.7 in
Shipping Weight	31.0 kg   68.3 lb

## Regulatory Compliance/Certifications

### Agency

RoHS 2011/65/EU  
China RoHS SJ/T 11364-2006  
ISO 9001:2008

### Classification

Compliant by Exemption  
Above Maximum Concentration Value (MCV)  
Designed, manufactured and/or distributed under this quality management system



SBNHH-1D65B

## Included Products

BSAMNT-1 — Wide Profile Antenna Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

## \* Footnotes

Performance Note      Severe environmental conditions may degrade optimum performance

# ALCATEL-LUCENT B13 RRH4X30-4R

Alcatel-Lucent B13 Remote Radio Head 4x30-4R is the newest addition of Remote Radio Head to the extended product line of Alcatel-Lucent's distributed Base Station solutions, aimed at facilitating smooth RF site acquisition and related civil engineering.

**Supporting 2Tx/4Tx MIMO and 4-way Rx diversity**, Alcatel-Lucent B13 RRH4x30-4R allows operators to have a compact radio solution to deploy LTE in the 700U band (700 MHz, 3GPP band 13), providing them with the means to achieve high capacity, high quality and high coverage with minimum site requirements.

The Alcatel-Lucent B13 RRH4x30-4R product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x60 W or 4x30 W RF output power. It supports also 4-way Rx diversity and up to 10MHz instantaneous bandwidth.

The Alcatel-Lucent B13 RRH4x30-4R is a near zero-footprint solution and operates noise free, simplifying negotiations with site property owners and minimizing environmental impacts.

Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the RF feeder needs and installation costs.

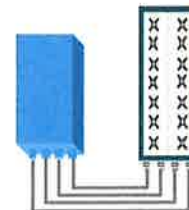


## FEATURES

- Supporting LTE in 700 MHz band (700U, 3GPP band 13)
- LTE 2Tx or 4Tx MIMO (SW switchable)
- Output power: Up to 2x60W or 4x30W
- 10MHz LTE carrier with 4Rx Diversity
- Convection-cooled (fan-less)
- Supports AISG 2.0 ALD devices (RET, TMA) through RS485 or RF ports

## BENEFITS

- Compact to reduce additional footprint when adding LTE in 700U band
- MIMO scheme operation selection (2Tx or 4Tx) by software only
- Improves downlink spectral efficiency through MIMO4
- Increases LTE coverage thanks to 4Rx diversity capability and best in class Rx sensitivity
- Flexible mounting options: Pole or Wall



4x30W with 4T4R  
or  
2x60W with 2T4R  
Can be switched between  
modes via SW w/o site  
visit



## TECHNICAL SPECIFICATIONS

Features & performance	
<b>Number of TX/RX paths</b>	4 duplexed (either 4T4R or 2T4R by SW)
<b>Frequency band</b>	U700 (C) (3GPP bands 13): DL: 746 - 756 MHz / UL: 777 - 787 MHz
<b>Instantaneous bandwidth - #carriers</b>	10MHz – 1 LTE carrier (In 10MHz occupied bandwidth)
<b>LTE carrier bandwidth</b>	10 MHz
<b>RF output power</b>	2x60W or 4x30W (by SW)
<b>Noise figure – RX Diversity scheme</b>	2 dB typ. (<2.5 dB max) – 2 or 4 way Rx diversity
<b>Sizes (HxWxD) in mm (in.)</b>	550 x 305 x 230 (21.6" x 12.0" x 9") (with solar shield)
<b>Volume in L</b>	38 (with solar shield)
<b>Weight in kg (lb) (w/o mounting HW)</b>	26 (57.2) (with solar shield)
<b>DC voltage range</b>	-40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption
<b>DC power consumption</b>	550W typical @100% RF load ( in 2Tx or 4TX mode)
<b>Environmental conditions</b>	-40°C (-40°F) / +55°C (+131°F) IP65
<b>Wind load (@150km/h or 93mph)</b>	Frontal: <200N / Lateral : <150N
<b>Antenna ports</b>	4 ports 7/16 DIN female (50 ohms) VSWR < 1.5
<b>CPRI ports</b>	2 CPRI ports (HW ready for Rate7, 9.8 Gbps) SFP single mode dual fiber
<b>AISG interfaces</b>	1 AISG2.0 output (RS485) Integrated Smart Bias Tees (x2)
<b>Misc. Interfaces</b>	4 external alarms (1 connector) – 4 RF Tx & 4 RF Rx monitor ports - 1 DC connector (2 pins)
<b>Installation conditions</b>	Pole and wall mounting
<b>Regulatory compliance</b>	3GPP 36.141 / 3GPP 36.113 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27

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# **ATTACHMENT 2**

		General	Power	Density				
<b>Site Name: Branford Short Beach</b>								
<b>Tower Height: 119Ft.</b>								
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total
*AT&T UMTS	2	500	120	880	0.0277	0.5867	0.47%	
*AT&T UMTS	2	500	120	1900	0.0277	1.0000	0.28%	
*AT&T GSM	2	1476	120	734	0.0817	0.4893	1.67%	
*AT&T GSM	2	3664	120	1900	0.2028	1.0000	2.03%	
*AT&T LTE	2	1285	120	2300	0.0711	1.0000	0.71%	
Verizon PCS	1	2349	100	0.0845	1970	1.0000	8.45%	
Verizon Cellular	9	416	100	0.1346	869	0.5793	23.24%	
Verizon AWS	1	2306	100	0.0829	2145	1.0000	8.29%	
Verizon 700	1	1328	100	0.0478	746	0.4973	9.60%	
								54.73%
* Source: Siting Council								

# **ATTACHMENT 3**



**AMERICAN TOWER®**  
CORPORATION

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## Structural Analysis Report

**Structure** : 119 ft Monopole  
**ATC Site Name** : Short Beach Branford CT, CT  
**ATC Site Number** : 283422  
**Engineering Number** : OAA641909\_C3\_02  
**Proposed Carrier** : Verizon Wireless  
**Carrier Site Name** : N/A  
**Carrier Site Number** : N/A  
**Site Location** : 171 Short Beach Road  
Branford, CT 06405-4930  
41.262800,-72.834400  
**County** : New Haven  
**Date** : June 29, 2017  
**Max Usage** : 69%  
**Result** : Pass

Prepared By:  
Amir H. Tabarestani, E.I.  
Structural Engineer II

Reviewed By:



Jun 29 2017 4:22 PM **cosign**

COA: PEC.0001553



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## Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 119 ft monopole to reflect the change in loading by Verizon Wireless.

## Supporting Documents

<b>Tower Drawings</b>	Sabre Job #73523, dated January 26, 2013
<b>Foundation Drawing</b>	Sabre Job #73523, dated January 26, 2013
<b>Geotechnical Report</b>	Terracon Project #J2135101, dated January 17, 2013

## Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

<b>Basic Wind Speed:</b>	101 mph (3-Second Gust, $V_{ASD}$ ), 130 mph (3-Second Gust, $V_{ULT}$ )
<b>Basic Wind Speed w/ Ice:</b>	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
<b>Code:</b>	ANSI/TIA-222-G / 2012 IBC / 2016 Connecticut State Building Code
<b>Structure Class:</b>	II
<b>Exposure Category:</b>	C
<b>Topographic Category:</b>	1
<b>Crest Height:</b>	0 ft
<b>Spectral Response:</b>	$S_s = 0.18$ , $S_1 = 0.06$
<b>Site Class:</b>	D - Stiff Soil

## Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at [Engineering@americantower.com](mailto:Engineering@americantower.com). Please include the American Tower site name, site number, and engineering number in the subject line for any questions.



**Existing and Reserved Equipment**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
119.0	120.0	3	Raycap DC6-48-60-18-8F	T-Arms	(6) 0.63" Cable (3) 0.40" Fiber (3) 3" Conduit	AT&T Mobility
		15	Ericsson RRUS 11 (w/o S.S)			
	118.0	12	Andrew SBNH-1D6565C			
100.0	100.0	3	Alcatel-Lucent RRH2x60-AWS	Low Profile Platform	(12) 1 5/8" Coax (2) 1 5/8" Hybriflex	Verizon
		3	Alcatel-Lucent PCS B25 RRH2x60/4x30			
		2	RFS DB-T1-6Z-8AB-0Z			
		3	Antel BXA-70063-6CF-EDIN-X			
		3	Andrew LNX-6514DS-A1M			

**Equipment to be Removed**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
100.0	100.0	6	Commscope HBXX-6516DS-A2M	-	-	Verizon
		3	Alcatel-Lucent 9442 RRH 2x40 700U			

**Proposed Equipment**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
100.0	100.0	3	Alcatel-Lucent RRH2x60 700	Low Profile Platform	-	Verizon
		6	Commscope SBNHH-1D65B			

<sup>1</sup>Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).





**Structure Usages**

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	57%	Pass
Shaft	69%	Pass
Base Plate	59%	Pass

**Foundations**

Reaction Component	Original Design Reactions	Factored Design Reactions*	Analysis Reactions	% of Design
Moment (Kips-Ft)	2,678.3	2,678.3	1,835.1	69%
Shear (Kips)	30.2	30.2	20.7	68%

\* The design reactions are factored by 1.35 per ANSI/TIA-222-G, Sec. 15.5.1

The structure base reactions resulting from this analysis are acceptable when compared to those shown on the original structure drawings, therefore no modification or reinforcement of the foundation will be required.

**Deflection and Sway\***

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
100.0	Alcatel-Lucent RRH2x60 700	Verizon Wireless	0.960	1.139
	Commscope SBNHH-1D65B			

\*Deflection and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-G



## **Standard Conditions**

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessary limited, to:

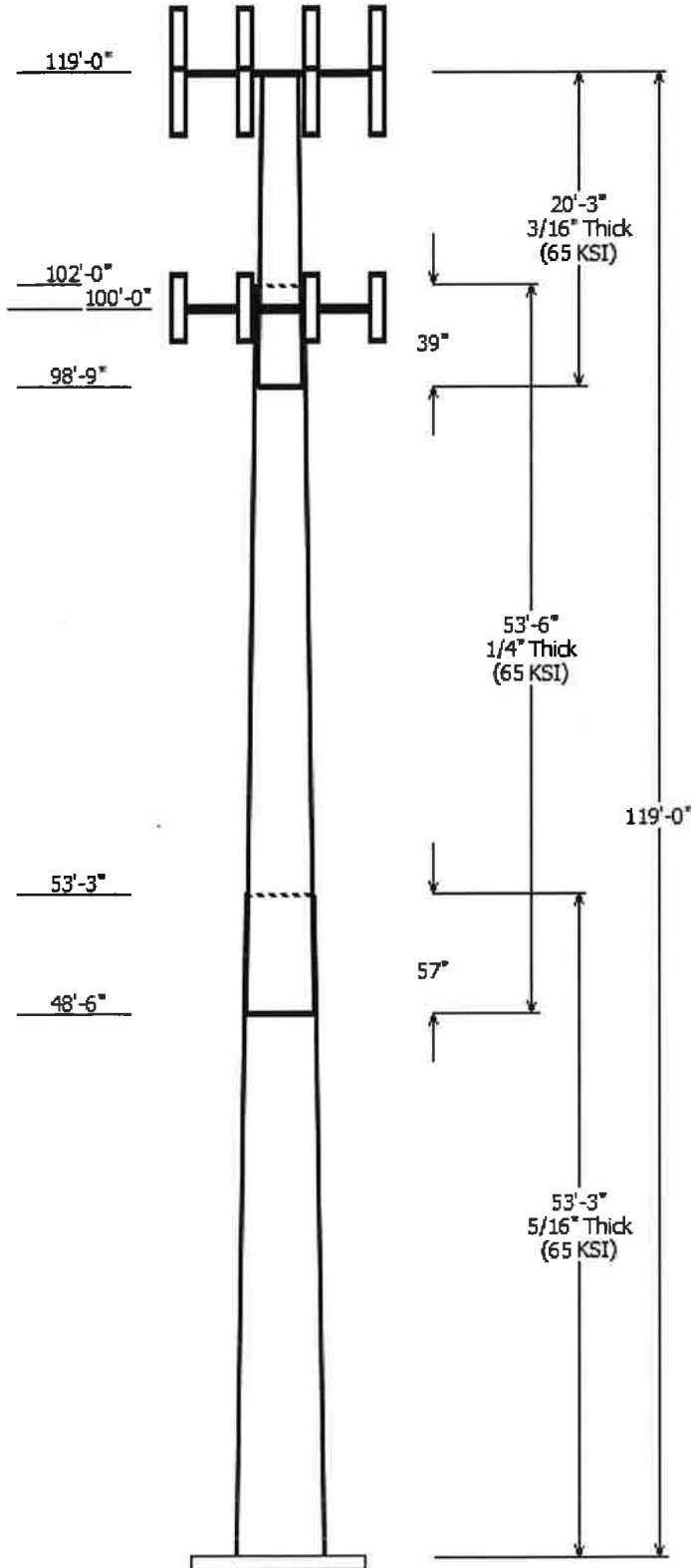
- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.
- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and American Tower Corporation, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

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Job Information	
Pole :	283422
Code :	ANSI/TIA-222-G
Description :	41.26278, -72.83442
Client :	VERIZON WIRELESS
Struct Class :	II
Location :	SHORT BEACH BRANFORD CT, CT
Shape :	18 Sides
Exposure :	C
Height :	119.00 (ft)
Topo :	1
Base Elev (ft):	0.00
Taper:	0.24220(in/ft)

Sections Properties								
Shaft Section	Length (ft)	Diameter (in)		Thick Joint (in)	Type	Overlap Length (in)	Taper (in/ft)	Steel Grade (ksi)
		Across Top	Flats Bottom					
1	53.250	32.80	45.70	0.313		0.000	0.242200	65
2	53.500	21.49	34.45	0.250	Slip Joint	57.000	0.242200	65
3	20.250	17.75	22.65	0.188	Slip Joint	39.000	0.242200	65

Discrete Appurtenance			
Attach Elev (ft)	Force Elev (ft)	Qty	Description
119.000	119.000	3	Round T-Arm
119.000	118.000	12	Andrew SBNH-1D6565C
119.000	120.000	15	Ericsson RRUS 11 (w/o S.S)
119.000	120.000	3	Raycap DC6-48-60-18-8F
100.000	100.000	3	Alcatel-Lucent RRH2x60 700
100.000	100.000	6	Commscope SBNHH-1D65B
100.000	100.000	3	Andrew LNX-6514DS-A1M
100.000	100.000	3	Antel BXA-70063-6CF-EDIN-X
100.000	100.000	2	RFS DB-T1-6Z-8AB-0Z
100.000	100.000	3	Alcatel-Lucent PCS B25
100.000	100.000	3	Alcatel-Lucent RRH2x60-AWS
100.000	100.000	1	Round Low Profile Platform

Linear Appurtenance			
Elev (ft) From	To	Description	Exposed To Wind
0.000	100.0	1 5/8" Coax	No
0.000	100.0	1 5/8" Hybriflex	No
0.000	119.0	0.40" Fiber	No
0.000	119.0	0.63" Cable	No
0.000	119.0	3" Conduit	No

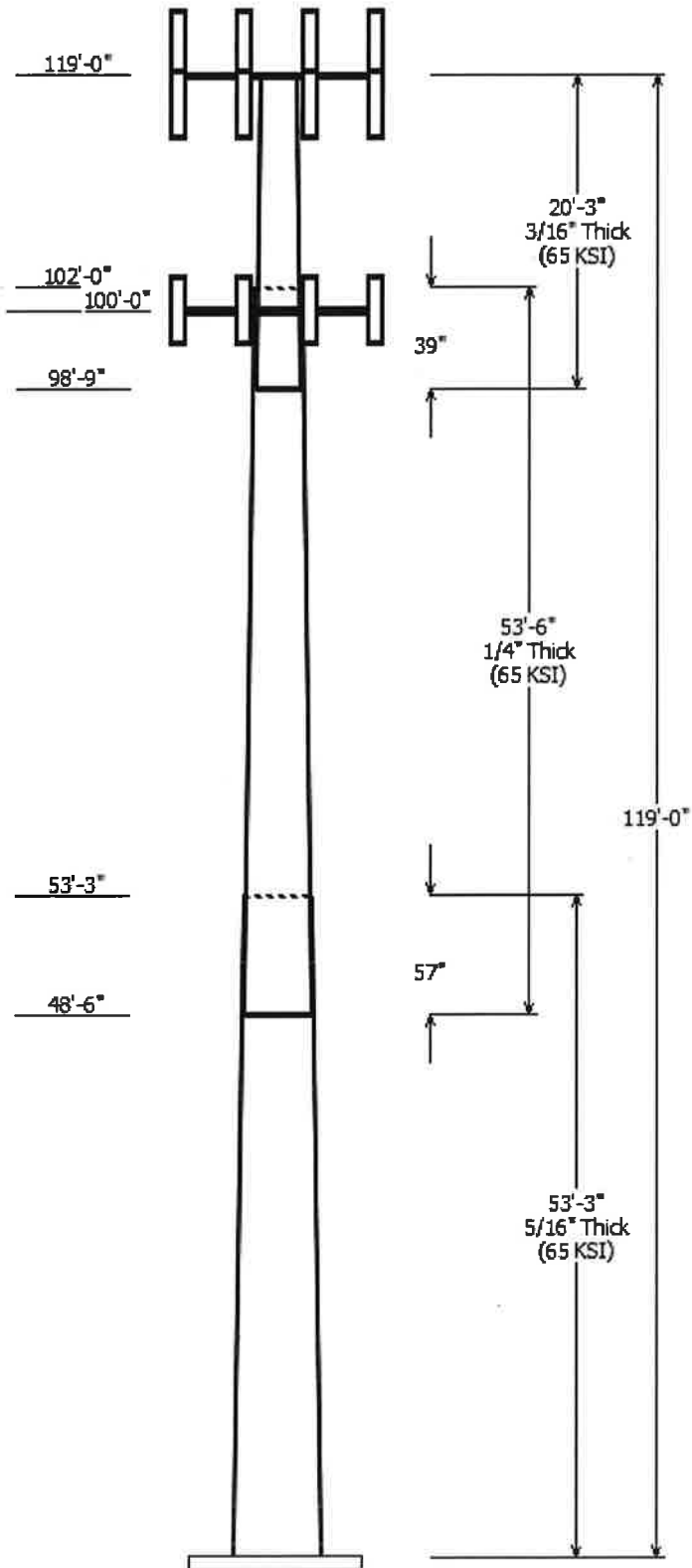
Load Cases	
1.2D + 1.6W	101 mph with No Ice
0.9D + 1.6W	101 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

Reactions			
Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	1835.11	20.66	24.91
0.9D + 1.6W	1819.54	20.65	18.67
1.2D + 1.0Di + 1.0Wi	448.86	5.22	40.50
(1.2 + 0.2Sds) * DL + E ELFM	92.85	0.97	24.58

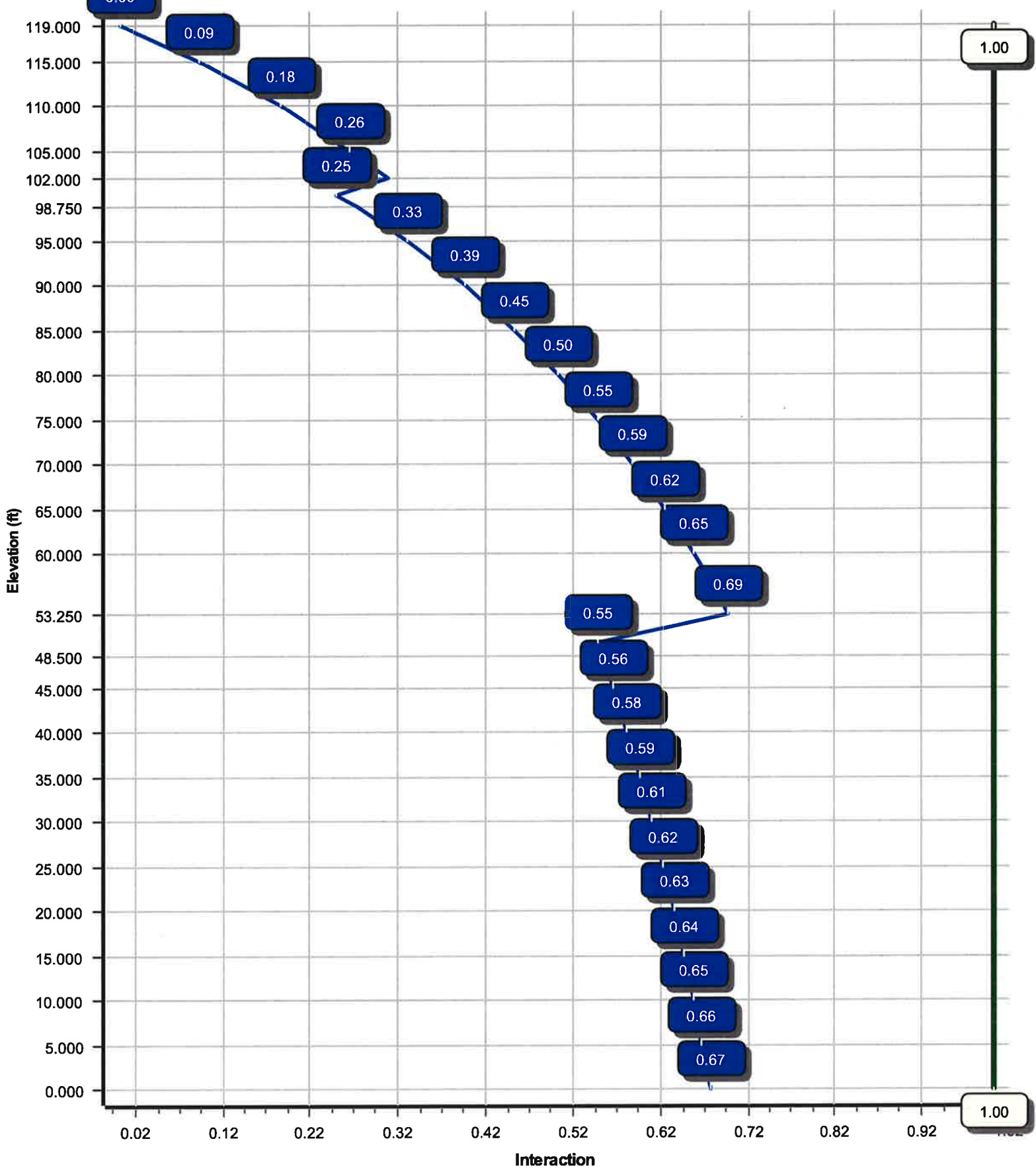
$(1.2 + 0.2Sds) * DL + E EMAM$	144.35	1.46	24.58
$(0.9 - 0.2Sds) * DL + E ELFM$	91.92	0.97	17.10
$(0.9 - 0.2Sds) * DL + E EMAM$	142.80	1.46	17.10
$1.0D + 1.0W$	402.96	4.55	20.79

### Dish Deflections

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
	0.00	0.000	0.000



**Load Case : 1.2D + 1.6W**  
**Max Ratio 69.45% at 53.3 ft**



Site Number: 283422

Code: ANSI/TIA-222-G

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Site Name: SHORT BEACH BRANFORD CT, CEEngineering Number:OAA641909\_C3\_02

6/29/2017 11:31:52 AM

Customer: VERIZON WIRELESS

### Analysis Parameters

Location:	NEW HAVEN County, CT	Height (ft):	119
Code:	ANSI/TIA-222-G	Base Diameter (in):	45.70
Shape:	18 Sides	Top Diameter (in):	17.75
Pole Type:	Taper	Taper (in/ft) :	0.242
Pole Manufacturer:	Sabre	Rotation (deg) :	0.00

### Ice & Wind Parameters

Structure Class:	II	Design Wind Speed Without Ice:	101 mph
Exposure Category:	C	Design Wind Speed With Ice:	50 mph
Topographic Category:	1	Operational Wind Speed:	60 mph
Crest Height:	0.0 ft	Design Ice Thickness:	0.75 in

### Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods		
Site Class:	D - Stiff Soil		
Period Based on Rayleigh Method (sec):	1.81		
T <sub>L</sub> (sec):	6	p:	1.3
S <sub>s</sub> :	0.180	S <sub>1</sub> :	0.061
F <sub>a</sub> :	1.600	F <sub>v</sub> :	2.400
S <sub>ds</sub> :	0.192	S <sub>d1</sub> :	0.098
		C <sub>s</sub> :	0.036
		C <sub>s</sub> Max:	0.036
		C <sub>s</sub> Min:	0.030

### Load Cases

1.2D + 1.6W	101 mph with No Ice
0.9D + 1.6W	101 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2S <sub>ds</sub> ) * DL + E ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2S <sub>ds</sub> ) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2S <sub>ds</sub> ) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2S <sub>ds</sub> ) * DL + E EMAM	Seismic (Reduced DL) Equivalent Modal Analysis Method
1.0D + 1.0W	Serviceability 60 mph

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Site Name: SHORT BEACH BRANFORD CT, CEngineering Number:OAA641909\_C3\_02

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Customer: VERIZON WIRELESS

**Shaft Section Properties**

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Joint Len (in)	Weight (lb)	Bottom						Top						
							Dia (in)	Elev (ft)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Taper (in/ft)
1-18	53.250	0.3125	65		0.00	6,998	45.70	0.00	45.02	11716.6	24.38	146.24	32.80	53.25	32.23	4297.9	17.10	104.97	0.242200
2-18	53.500	0.2500	65	Slip	57.00	4,005	34.45	48.50	27.14	4011.3	22.89	137.81	21.49	102.00	16.86	961.4	13.75	85.98	0.242200
3-18	20.250	0.1875	65	Slip	39.00	821	22.65	98.75	13.37	853.0	19.90	120.84	17.75	119.00	10.45	407.5	15.28	94.68	0.242200
Shaft Weight						11,824													

**Discrete Appurtenance Properties**

Attach Elev (ft)	Description	Qty	No Ice			Ice			Distance From Face (ft)	Vert Ecc (ft)
			Weight (lb)	EPAa (sf)	Orientation Factor	Weight (lb)	EPAa (sf)	Orientation Factor		
119.00	Andrew SBNH-1D6565C	12	66.10	11.450	0.70	322.06	13.062	0.70	0.000	-1.000
119.00	Ericsson RRUS 11 (w/o S.S)	15	45.00	2.190	0.50	110.32	2.779	0.50	0.000	1.000
119.00	Raycap DC6-48-60-18-8F	3	20.00	1.110	1.00	98.13	2.507	1.00	0.000	1.000
119.00	Round T-Arm	3	250.00	12.900	0.67	454.29	23.617	0.67	0.000	0.000
100.00	Alcatel-Lucent PCS B25	3	55.00	2.200	0.67	135.65	2.803	0.67	0.000	0.000
100.00	Alcatel-Lucent RRH2x60 700	3	56.70	2.150	0.50	134.05	2.748	0.50	0.000	0.000
100.00	Alcatel-Lucent RRH2x60-AWS	3	44.00	1.880	0.50	99.80	2.638	0.50	0.000	0.000
100.00	Andrew LNX-6514DS-A1M	3	38.40	8.170	0.69	232.08	9.419	0.69	0.000	0.000
100.00	Antel BXA-70063-6CF-EDIN-X	3	17.00	7.570	0.66	176.30	8.781	0.66	0.000	0.000
100.00	Commscope SBNHH-1D65B	6	50.70	8.170	0.69	244.43	9.422	0.69	0.000	0.000
100.00	RFS DB-T1-6Z-8AB-OZ	2	44.00	4.800	0.50	180.94	5.636	0.50	0.000	0.000
100.00	Round Low Profile Platform	1	1500.00	21.700	1.00	2,123.03	40.162	1.00	0.000	0.000
Totals		57	4803.70			13,461.77			Number of Loadings : 12	

**Linear Appurtenance Properties**

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Diameter (in)	Coax Weight (lb/ft)	Flat	Projected Width (in)	Exposed To Wind	Carrier
0.00	119.00	3	0.40" Fiber	0.40	0.09	N	0.00	N	AT&T Mobility
0.00	119.00	6	0.63" Cable	0.63	0.25	N	0.00	N	AT&T Mobility
0.00	119.00	3	3" Conduit	3.50	7.58	N	0.00	N	AT&T Mobility
0.00	100.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	Verizon Wireless
0.00	100.00	2	1 5/8" Hybriflex	1.98	1.30	N	0.00	N	Verizon Wireless

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Site Name: SHORT BEACH BRANFORD CT, CEEngineering Number:OAA641909\_C3\_02

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Customer: VERIZON WIRELESS

**Segment Properties** (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	F'y (ksi)	S (in <sup>3</sup> )	Z (in <sup>3</sup> )	Weight (lb)
0.00		0.3125	45.700	45.017	11,716.6	24.38	146.24	72.7	505.0	0.0	0.0
5.00		0.3125	44.489	43.816	10,803.6	23.69	142.36	73.5	478.3	0.0	755.7
10.00		0.3125	43.278	42.615	9,939.3	23.01	138.49	74.3	452.3	0.0	735.3
15.00		0.3125	42.067	41.414	9,122.3	22.33	134.61	75.1	427.1	0.0	714.8
20.00		0.3125	40.856	40.213	8,351.4	21.64	130.74	75.9	402.6	0.0	694.4
25.00		0.3125	39.645	39.012	7,625.2	20.96	126.86	76.7	378.8	0.0	674.0
30.00		0.3125	38.434	37.810	6,942.3	20.28	122.99	77.6	355.8	0.0	653.5
35.00		0.3125	37.223	36.609	6,301.5	19.59	119.11	78.4	333.4	0.0	633.1
40.00		0.3125	36.012	35.408	5,701.4	18.91	115.24	79.2	311.8	0.0	612.6
45.00		0.3125	34.801	34.207	5,140.6	18.23	111.36	80.0	290.9	0.0	592.2
48.50	Bot - Section 2	0.3125	33.953	33.366	4,770.8	17.75	108.65	80.5	276.8	0.0	402.4
50.00		0.3125	33.590	33.006	4,617.9	17.54	107.49	80.8	270.8	0.0	307.2
53.25	Top - Section 1	0.2500	33.303	26.226	3,620.0	22.08	133.21	75.4	214.1	0.0	654.2
55.00		0.2500	32.879	25.890	3,482.5	21.78	131.52	75.8	208.6	0.0	155.2
60.00		0.2500	31.668	24.929	3,109.0	20.93	126.67	76.8	193.4	0.0	432.3
65.00		0.2500	30.457	23.968	2,763.2	20.07	121.83	77.8	178.7	0.0	416.0
70.00		0.2500	29.246	23.007	2,444.0	19.22	116.98	78.8	164.6	0.0	399.6
75.00		0.2500	28.035	22.047	2,150.4	18.36	112.14	79.8	151.1	0.0	383.3
80.00		0.2500	26.824	21.086	1,881.3	17.51	107.30	80.8	138.1	0.0	366.9
85.00		0.2500	25.613	20.125	1,635.6	16.65	102.45	81.8	125.8	0.0	350.6
90.00		0.2500	24.402	19.164	1,412.4	15.80	97.61	82.6	114.0	0.0	334.2
95.00		0.2500	23.191	18.203	1,210.4	14.95	92.76	82.6	102.8	0.0	317.9
98.75	Bot - Section 3	0.2500	22.283	17.482	1,072.2	14.31	89.13	82.6	94.8	0.0	227.7
100.0		0.2500	21.980	17.242	1,028.6	14.09	87.92	82.6	92.2	0.0	130.3
102.0	Top - Section 2	0.1875	21.871	12.904	766.5	19.16	116.64	78.9	69.0	0.0	204.8
105.0		0.1875	21.144	12.471	692.0	18.47	112.77	79.7	64.5	0.0	129.5
110.0		0.1875	19.933	11.751	578.8	17.33	106.31	81.0	57.2	0.0	206.1
115.0		0.1875	18.722	11.030	478.7	16.20	99.85	82.4	50.4	0.0	193.8
119.0		0.1875	17.753	10.453	407.5	15.28	94.68	82.6	45.2	0.0	146.2
11,823.7											



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Site Name: SHORT BEACH BRANFORD CT, CEngineering Number:OAA641909\_C3\_02

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Customer: VERIZON WIRELESS

Load Case: 1.2D + 1.6W

101 mph with No Ice

22 Iterations

Gust Response Factor :1.10

Wind Importance Factor 1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

**Shaft Segment Forces (Factored)**

Seg Top Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Ap (sf)	EPAs (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	21.088	23.19	360.09	0.650	0.000	0.00	0.000	0.00	230.1	0.0	0.0
5.00		1.00	0.85	21.088	23.19	355.32	0.650	0.000	5.00	19.079	12.40	454.1	0.0	906.8
10.00		1.00	0.85	21.088	23.19	345.78	0.650	0.000	5.00	18.567	12.07	441.7	0.0	882.3
15.00		1.00	0.85	21.088	23.19	336.23	0.650	0.000	5.00	18.054	11.74	436.1	0.0	857.8
20.00		1.00	0.87	21.754	23.93	331.82	0.650	0.000	5.00	17.542	11.40	441.7	0.0	833.3
25.00		1.00	0.92	22.936	25.23	330.76	0.650	0.000	5.00	17.030	11.07	449.5	0.0	808.7
30.00		1.00	0.96	23.926	26.31	327.66	0.650	0.000	5.00	16.517	10.74	452.9	0.0	784.2
35.00		1.00	0.99	24.783	27.26	323.13	0.650	0.000	5.00	16.005	10.40	453.2	0.0	759.7
40.00		1.00	1.02	25.541	28.09	317.53	0.650	0.000	5.00	15.493	10.07	451.0	0.0	735.2
45.00		1.00	1.05	26.223	28.84	311.10	0.650	0.000	5.00	14.980	9.74	380.5	0.0	710.7
48.50	Bot - Section 2	1.00	1.07	26.754	29.42	305.10	0.650	0.000	3.50	10.181	6.62	223.1	0.0	482.9
50.00		1.00	1.09	27.049	29.75	301.38	0.650	0.000	1.50	4.350	2.83	212.1	0.0	368.6
53.25	Top - Section 1	1.00	1.10	27.319	30.05	297.71	0.650	0.000	3.25	9.267	6.02	222.1	0.0	785.0
55.00		1.00	1.11	27.592	30.35	298.25	0.650	0.000	1.75	4.900	3.19	295.6	0.0	186.2
60.00		1.00	1.12	27.946	30.74	292.74	0.650	0.000	5.00	13.655	8.88	432.1	0.0	518.8
65.00		1.00	1.14	28.440	31.28	284.24	0.650	0.000	5.00	13.142	8.54	422.6	0.0	499.2
70.00		1.00	1.16	28.905	31.79	275.38	0.650	0.000	5.00	12.630	8.21	412.2	0.0	479.5
75.00		1.00	1.18	29.343	32.27	266.20	0.650	0.000	5.00	12.118	7.88	400.9	0.0	459.9
80.00		1.00	1.19	29.758	32.73	256.74	0.650	0.000	5.00	11.605	7.54	388.9	0.0	440.3
85.00		1.00	1.21	30.152	33.16	247.03	0.650	0.000	5.00	11.093	7.21	376.1	0.0	420.7
90.00		1.00	1.23	30.528	33.58	237.08	0.650	0.000	5.00	10.581	6.88	362.6	0.0	401.1
95.00		1.00	1.24	30.887	33.97	226.92	0.650	0.000	5.00	10.068	6.54	306.6	0.0	381.5
98.75	Bot - Section 3	1.00	1.25	31.189	34.30	217.88	0.650	0.000	3.75	7.215	4.69	171.4	0.0	273.2
100.0	Appertunance(s)	1.00	1.26	31.357	34.49	212.64	0.650	0.000	1.25	2.381	1.55	110.1	0.0	156.4
102.0	Top - Section 2	1.00	1.26	31.464	34.61	209.22	0.650	0.000	2.00	3.742	2.43	166.1	0.0	245.8
105.0		1.00	1.27	31.627	34.78	207.53	0.650	0.000	3.00	5.460	3.55	257.2	0.0	155.4
110.0		1.00	1.28	31.880	35.06	198.98	0.650	0.000	5.00	8.690	5.65	309.0	0.0	247.3
115.0		1.00	1.29	32.187	35.40	188.14	0.650	0.000	5.00	8.177	5.32	265.1	0.0	232.6
119.0	Appertunance(s)	1.00	1.30	32.454	35.69	178.27	0.650	0.000	4.00	6.173	4.01	114.6	0.0	175.4
Totals:									119.00			9,639.4	0.0	14,188.5

**Load Case:** 1.2D + 1.6W

101 mph with No Ice

22 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

**Applied Segment Forces Summary**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces			Sum of Forces			
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		230.1	0.0					0.0	0.0	230.1	0.0	0.0	0.0
5.00		454.1	906.8					0.0	221.7	454.1	1,128.5	0.0	0.0
10.00		441.7	882.3					0.0	221.7	441.7	1,104.0	0.0	0.0
15.00		436.1	857.8					0.0	221.7	436.1	1,079.5	0.0	0.0
20.00		441.7	833.3					0.0	221.7	441.7	1,055.0	0.0	0.0
25.00		449.5	808.7					0.0	221.7	449.5	1,030.4	0.0	0.0
30.00		452.9	784.2					0.0	221.7	452.9	1,005.9	0.0	0.0
35.00		453.2	759.7					0.0	221.7	453.2	981.4	0.0	0.0
40.00		451.0	735.2					0.0	221.7	451.0	956.9	0.0	0.0
45.00		380.5	710.7					0.0	221.7	380.5	932.4	0.0	0.0
48.50	Bot - Section 2	223.1	482.9					0.0	155.2	223.1	638.1	0.0	0.0
50.00		212.1	368.6					0.0	66.5	212.1	435.1	0.0	0.0
53.25	Top - Section 1	222.1	785.0					0.0	144.1	222.1	929.1	0.0	0.0
55.00		295.6	186.2					0.0	77.6	295.6	263.8	0.0	0.0
60.00		432.1	518.8					0.0	221.7	432.1	740.5	0.0	0.0
65.00		422.6	499.2					0.0	221.7	422.6	720.9	0.0	0.0
70.00		412.2	479.5					0.0	221.7	412.2	701.2	0.0	0.0
75.00		400.9	459.9					0.0	221.7	400.9	681.6	0.0	0.0
80.00		388.9	440.3					0.0	221.7	388.9	662.0	0.0	0.0
85.00		376.1	420.7					0.0	221.7	376.1	642.4	0.0	0.0
90.00		362.6	401.1					0.0	221.7	362.6	622.8	0.0	0.0
95.00		306.6	381.5					0.0	221.7	306.6	603.2	0.0	0.0
98.75	Bot - Section 3	171.4	273.2					0.0	166.3	171.4	439.5	0.0	0.0
100.00	Appertunance(s)	110.1	156.4	4,779.7	0.0	0.0	3,030.6	0.0	55.4	4,889.8	3,242.4	0.0	0.0
102.00	Top - Section 2	166.1	245.8					0.0	58.8	166.1	304.6	0.0	0.0
105.00		257.2	155.4					0.0	88.2	257.2	243.7	0.0	0.0
110.00		309.0	247.3					0.0	147.1	309.0	394.3	0.0	0.0
115.00		265.1	232.6					0.0	147.1	265.1	379.6	0.0	0.0
119.00	Appertunance(s)	114.6	175.4	6,425.1	0.0	-3,495.3	2,733.8	0.0	117.6	6,539.7	3,026.9	0.0	0.0
<b>Totals:</b>										20,844.2	24,945.7	0.00	0.00

**Load Case:** 1.2D + 1.6W

101 mph with No Ice

22 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

**Calculated Forces**

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-24.91	-20.66	0.00	-1,835.11	0.00	1,835.11	2,946.72	1,473.36	5,500.90	2,754.54	0.00	0.00	0.675
5.00	-23.70	-20.30	0.00	-1,731.81	0.00	1,731.81	2,899.79	1,449.90	5,267.87	2,637.85	0.12	-0.22	0.665
10.00	-22.52	-19.94	0.00	-1,630.33	0.00	1,630.33	2,851.12	1,425.56	5,036.47	2,521.98	0.46	-0.44	0.655
15.00	-21.37	-19.57	0.00	-1,530.65	0.00	1,530.65	2,800.72	1,400.36	4,806.98	2,407.06	1.04	-0.66	0.644
20.00	-20.24	-19.20	0.00	-1,432.78	0.00	1,432.78	2,748.57	1,374.29	4,579.65	2,293.23	1.86	-0.90	0.632
25.00	-19.14	-18.81	0.00	-1,336.77	0.00	1,336.77	2,694.69	1,347.35	4,354.74	2,180.61	2.93	-1.13	0.620
30.00	-18.07	-18.42	0.00	-1,242.70	0.00	1,242.70	2,639.07	1,319.54	4,132.51	2,069.33	4.24	-1.37	0.608
35.00	-17.02	-18.01	0.00	-1,150.63	0.00	1,150.63	2,581.72	1,290.86	3,913.23	1,959.52	5.81	-1.62	0.594
40.00	-16.00	-17.60	0.00	-1,060.58	0.00	1,060.58	2,522.63	1,261.31	3,697.16	1,851.33	7.64	-1.87	0.579
45.00	-15.02	-17.25	0.00	-972.57	0.00	972.57	2,461.80	1,230.90	3,484.55	1,744.87	9.73	-2.12	0.564
48.50	-14.35	-17.03	0.00	-912.21	0.00	912.21	2,418.18	1,209.09	3,337.93	1,671.45	11.35	-2.30	0.552
50.00	-13.89	-16.83	0.00	-886.67	0.00	886.67	2,399.23	1,199.61	3,275.68	1,640.27	12.09	-2.38	0.547
53.25	-12.93	-16.60	0.00	-831.97	0.00	831.97	1,780.50	890.25	2,418.90	1,211.25	13.77	-2.56	0.694
55.00	-12.62	-16.34	0.00	-802.92	0.00	802.92	1,765.87	882.93	2,368.02	1,185.77	14.72	-2.65	0.685
60.00	-11.81	-15.93	0.00	-721.23	0.00	721.23	1,722.87	861.43	2,223.96	1,113.63	17.66	-2.96	0.655
65.00	-11.03	-15.53	0.00	-641.56	0.00	641.56	1,678.13	839.06	2,082.05	1,042.57	20.93	-3.27	0.622
70.00	-10.28	-15.14	0.00	-563.89	0.00	563.89	1,631.65	815.83	1,942.57	972.73	24.53	-3.58	0.586
75.00	-9.55	-14.74	0.00	-488.21	0.00	488.21	1,583.44	791.72	1,805.76	904.22	28.44	-3.89	0.546
80.00	-8.84	-14.35	0.00	-414.50	0.00	414.50	1,533.49	766.75	1,671.90	837.19	32.67	-4.19	0.501
85.00	-8.16	-13.97	0.00	-342.74	0.00	342.74	1,481.81	740.90	1,541.24	771.77	37.21	-4.47	0.450
90.00	-7.51	-13.59	0.00	-272.90	0.00	272.90	1,423.78	711.89	1,409.49	705.79	42.04	-4.74	0.392
95.00	-6.89	-13.26	0.00	-204.94	0.00	204.94	1,352.39	676.20	1,271.00	636.45	47.14	-4.98	0.327
98.75	-6.44	-13.06	0.00	-155.23	0.00	155.23	1,298.85	649.43	1,171.84	586.79	51.11	-5.14	0.270
100.00	-3.64	-7.90	0.00	-138.90	0.00	138.90	1,281.00	640.50	1,139.67	570.68	52.46	-5.19	0.246
102.00	-3.34	-7.71	0.00	-123.10	0.00	123.10	915.93	457.96	815.42	408.32	54.65	-5.26	0.305
105.00	-3.11	-7.44	0.00	-99.96	0.00	99.96	894.26	447.13	769.22	385.18	57.99	-5.36	0.263
110.00	-2.73	-7.10	0.00	-62.75	0.00	62.75	856.75	428.37	693.99	347.51	63.69	-5.53	0.184
115.00	-2.37	-6.81	0.00	-27.23	0.00	27.23	817.50	408.75	621.20	311.06	69.54	-5.64	0.091
119.00	0.00	-6.54	0.00	0.00	0.00	0.00	776.64	388.32	559.00	279.91	74.27	-5.67	0.000

Site Number: 283422

Code: ANSI/TIA-222-G

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Site Name: SHORT BEACH BRANFORD CT, Engineering Number: OAA641909\_C3\_02

6/29/2017 11:31:53 AM

Customer: VERIZON WIRELESS

**Load Case: 0.9D + 1.6W**

101 mph with No Ice (Reduced DL)

22 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

**Shaft Segment Forces (Factored)**

Seg Top							Ice				Wind	Dead	Tot Dead	
Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Thick (in)	Tributary (ft)	Ap (sf)	EPAs (sf)	Force X (lb)	Load Ice (lb)	Load (lb)
0.00		1.00	0.85	21.088	23.19	360.09	0.650	0.000	0.00	0.000	0.00	230.1	0.0	0.0
5.00		1.00	0.85	21.088	23.19	355.32	0.650	0.000	5.00	19.079	12.40	454.1	0.0	680.1
10.00		1.00	0.85	21.088	23.19	345.78	0.650	0.000	5.00	18.567	12.07	441.7	0.0	661.7
15.00		1.00	0.85	21.088	23.19	336.23	0.650	0.000	5.00	18.054	11.74	436.1	0.0	643.3
20.00		1.00	0.87	21.754	23.93	331.82	0.650	0.000	5.00	17.542	11.40	441.7	0.0	625.0
25.00		1.00	0.92	22.936	25.23	330.76	0.650	0.000	5.00	17.030	11.07	449.5	0.0	606.6
30.00		1.00	0.96	23.926	26.31	327.66	0.650	0.000	5.00	16.517	10.74	452.9	0.0	588.2
35.00		1.00	0.99	24.783	27.26	323.13	0.650	0.000	5.00	16.005	10.40	453.2	0.0	569.8
40.00		1.00	1.02	25.541	28.09	317.53	0.650	0.000	5.00	15.493	10.07	451.0	0.0	551.4
45.00		1.00	1.05	26.223	28.84	311.10	0.650	0.000	5.00	14.980	9.74	380.5	0.0	533.0
48.50	Bot - Section 2	1.00	1.07	26.754	29.42	305.10	0.650	0.000	3.50	10.181	6.62	223.1	0.0	362.2
50.00		1.00	1.09	27.049	29.75	301.38	0.650	0.000	1.50	4.350	2.83	212.1	0.0	276.5
53.25	Top - Section 1	1.00	1.10	27.319	30.05	297.71	0.650	0.000	3.25	9.267	6.02	222.1	0.0	588.8
55.00		1.00	1.11	27.592	30.35	298.25	0.650	0.000	1.75	4.900	3.19	295.6	0.0	139.7
60.00		1.00	1.12	27.946	30.74	292.74	0.650	0.000	5.00	13.655	8.88	432.1	0.0	389.1
65.00		1.00	1.14	28.440	31.28	284.24	0.650	0.000	5.00	13.142	8.54	422.6	0.0	374.4
70.00		1.00	1.16	28.905	31.79	275.38	0.650	0.000	5.00	12.630	8.21	412.2	0.0	359.7
75.00		1.00	1.18	29.343	32.27	266.20	0.650	0.000	5.00	12.118	7.88	400.9	0.0	344.9
80.00		1.00	1.19	29.758	32.73	256.74	0.650	0.000	5.00	11.605	7.54	388.9	0.0	330.2
85.00		1.00	1.21	30.152	33.16	247.03	0.650	0.000	5.00	11.093	7.21	376.1	0.0	315.5
90.00		1.00	1.23	30.528	33.58	237.08	0.650	0.000	5.00	10.581	6.88	362.6	0.0	300.8
95.00		1.00	1.24	30.887	33.97	226.92	0.650	0.000	5.00	10.068	6.54	306.6	0.0	286.1
98.75	Bot - Section 3	1.00	1.25	31.189	34.30	217.88	0.650	0.000	3.75	7.215	4.69	171.4	0.0	204.9
100.0	Appertunance(s)	1.00	1.26	31.357	34.49	212.64	0.650	0.000	1.25	2.381	1.55	110.1	0.0	117.3
102.0	Top - Section 2	1.00	1.26	31.464	34.61	209.22	0.650	0.000	2.00	3.742	2.43	166.1	0.0	184.3
105.0		1.00	1.27	31.627	34.78	207.53	0.650	0.000	3.00	5.460	3.55	257.2	0.0	116.6
110.0		1.00	1.28	31.880	35.06	198.98	0.650	0.000	5.00	8.690	5.65	309.0	0.0	185.4
115.0		1.00	1.29	32.187	35.40	188.14	0.650	0.000	5.00	8.177	5.32	265.1	0.0	174.4
119.0	Appertunance(s)	1.00	1.30	32.454	35.69	178.27	0.650	0.000	4.00	6.173	4.01	114.6	0.0	131.6
Totals:									119.00			9,639.4	0.0	10,641.4

Load Case: 0.9D + 1.6W

101 mph with No Ice (Reduced DL)

22 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

**Applied Segment Forces Summary**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		230.1	0.0					0.0	0.0	230.1	0.0	0.0	0.0
5.00		454.1	680.1					0.0	166.3	454.1	846.4	0.0	0.0
10.00		441.7	661.7					0.0	166.3	441.7	828.0	0.0	0.0
15.00		436.1	643.3					0.0	166.3	436.1	809.6	0.0	0.0
20.00		441.7	625.0					0.0	166.3	441.7	791.2	0.0	0.0
25.00		449.5	606.6					0.0	166.3	449.5	772.8	0.0	0.0
30.00		452.9	588.2					0.0	166.3	452.9	754.4	0.0	0.0
35.00		453.2	569.8					0.0	166.3	453.2	736.1	0.0	0.0
40.00		451.0	551.4					0.0	166.3	451.0	717.7	0.0	0.0
45.00		380.5	533.0					0.0	166.3	380.5	699.3	0.0	0.0
48.50	Bot - Section 2	223.1	362.2					0.0	116.4	223.1	478.5	0.0	0.0
50.00		212.1	276.5					0.0	49.9	212.1	326.3	0.0	0.0
53.25	Top - Section 1	222.1	588.8					0.0	108.1	222.1	696.8	0.0	0.0
55.00		295.6	139.7					0.0	58.2	295.6	197.9	0.0	0.0
60.00		432.1	389.1					0.0	166.3	432.1	555.4	0.0	0.0
65.00		422.6	374.4					0.0	166.3	422.6	540.6	0.0	0.0
70.00		412.2	359.7					0.0	166.3	412.2	525.9	0.0	0.0
75.00		400.9	344.9					0.0	166.3	400.9	511.2	0.0	0.0
80.00		388.9	330.2					0.0	166.3	388.9	496.5	0.0	0.0
85.00		376.1	315.5					0.0	166.3	376.1	481.8	0.0	0.0
90.00		362.6	300.8					0.0	166.3	362.6	467.1	0.0	0.0
95.00		306.6	286.1					0.0	166.3	306.6	452.4	0.0	0.0
98.75	Bot - Section 3	171.4	204.9					0.0	124.7	171.4	329.6	0.0	0.0
100.00	Appertunance(s)	110.1	117.3	4,779.7	0.0	0.0	2,272.9	0.0	41.6	4,889.8	2,431.8	0.0	0.0
102.00	Top - Section 2	166.1	184.3					0.0	44.1	166.1	228.5	0.0	0.0
105.00		257.2	116.6					0.0	66.2	257.2	182.7	0.0	0.0
110.00		309.0	185.4					0.0	110.3	309.0	295.7	0.0	0.0
115.00		265.1	174.4					0.0	110.3	265.1	284.7	0.0	0.0
119.00	Appertunance(s)	114.6	131.6	6,425.1	0.0	-3,495.3	2,050.4	0.0	88.2	6,539.7	2,270.2	0.0	0.0
<b>Totals:</b>										20,844.2	18,709.3	0.00	0.00

Load Case: 0.9D + 1.6W

101 mph with No Ice (Reduced DL)

22 Iterations

Gust Response Factor :1.10

Wind Importance Factor 1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-18.67	-20.65	0.00	-1,819.54	0.00	1,819.54	2,946.72	1,473.36	5,500.90	2,754.54	0.00	0.00	0.667
5.00	-17.75	-20.26	0.00	-1,716.30	0.00	1,716.30	2,899.79	1,449.90	5,267.87	2,637.85	0.12	-0.21	0.657
10.00	-16.85	-19.88	0.00	-1,614.99	0.00	1,614.99	2,851.12	1,425.56	5,036.47	2,521.98	0.46	-0.43	0.646
15.00	-15.96	-19.50	0.00	-1,515.60	0.00	1,515.60	2,800.72	1,400.36	4,806.98	2,407.06	1.03	-0.66	0.636
20.00	-15.10	-19.11	0.00	-1,418.10	0.00	1,418.10	2,748.57	1,374.29	4,579.65	2,293.23	1.84	-0.89	0.624
25.00	-14.26	-18.70	0.00	-1,322.57	0.00	1,322.57	2,694.69	1,347.35	4,354.74	2,180.61	2.90	-1.12	0.612
30.00	-13.44	-18.29	0.00	-1,229.05	0.00	1,229.05	2,639.07	1,319.54	4,132.51	2,069.33	4.20	-1.36	0.599
35.00	-12.64	-17.87	0.00	-1,137.59	0.00	1,137.59	2,581.72	1,290.86	3,913.23	1,959.52	5.75	-1.60	0.586
40.00	-11.86	-17.45	0.00	-1,048.23	0.00	1,048.23	2,522.63	1,261.31	3,697.16	1,851.33	7.56	-1.85	0.571
45.00	-11.11	-17.09	0.00	-960.97	0.00	960.97	2,461.80	1,230.90	3,484.55	1,744.87	9.63	-2.10	0.555
48.50	-10.60	-16.87	0.00	-901.16	0.00	901.16	2,418.18	1,209.09	3,337.93	1,671.45	11.24	-2.28	0.544
50.00	-10.25	-16.67	0.00	-875.85	0.00	875.85	2,399.23	1,199.61	3,275.68	1,640.27	11.97	-2.36	0.538
53.25	-9.52	-16.44	0.00	-821.67	0.00	821.67	1,780.50	890.25	2,418.90	1,211.25	13.63	-2.53	0.684
55.00	-9.28	-16.17	0.00	-792.90	0.00	792.90	1,765.87	882.93	2,368.02	1,185.77	14.57	-2.62	0.674
60.00	-8.66	-15.76	0.00	-712.06	0.00	712.06	1,722.87	861.43	2,223.96	1,113.63	17.48	-2.93	0.645
65.00	-8.06	-15.35	0.00	-633.28	0.00	633.28	1,678.13	839.06	2,082.05	1,042.57	20.72	-3.24	0.613
70.00	-7.48	-14.95	0.00	-556.53	0.00	556.53	1,631.65	815.83	1,942.57	972.73	24.27	-3.54	0.577
75.00	-6.92	-14.55	0.00	-481.80	0.00	481.80	1,583.44	791.72	1,805.76	904.22	28.14	-3.84	0.538
80.00	-6.38	-14.16	0.00	-409.05	0.00	409.05	1,533.49	766.75	1,671.90	837.19	32.33	-4.14	0.493
85.00	-5.87	-13.78	0.00	-338.25	0.00	338.25	1,481.81	740.90	1,541.24	771.77	36.81	-4.42	0.443
90.00	-5.37	-13.40	0.00	-269.36	0.00	269.36	1,423.78	711.89	1,409.49	705.79	41.58	-4.69	0.386
95.00	-4.90	-13.08	0.00	-202.35	0.00	202.35	1,352.39	676.20	1,271.00	636.45	46.62	-4.92	0.322
98.75	-4.56	-12.88	0.00	-153.32	0.00	153.32	1,298.85	649.43	1,171.84	586.79	50.55	-5.08	0.265
100.00	-2.57	-7.80	0.00	-137.22	0.00	137.22	1,281.00	640.50	1,139.67	570.68	51.88	-5.13	0.243
102.00	-2.35	-7.62	0.00	-121.62	0.00	121.62	915.93	457.96	815.42	408.32	54.04	-5.20	0.301
105.00	-2.17	-7.35	0.00	-98.76	0.00	98.76	894.26	447.13	769.22	385.18	57.34	-5.30	0.259
110.00	-1.89	-7.02	0.00	-62.01	0.00	62.01	856.75	428.37	693.99	347.51	62.98	-5.46	0.181
115.00	-1.62	-6.73	0.00	-26.92	0.00	26.92	817.50	408.75	621.20	311.06	68.75	-5.57	0.089
119.00	0.00	-6.54	0.00	0.00	0.00	0.00	776.64	388.32	559.00	279.91	73.44	-5.60	0.000

Site Number: 283422

Code: ANSI/TIA-222-G

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Site Name: SHORT BEACH BRANFORD CT, CEngineering Number:OAA641909\_C3\_02

6/29/2017 11:31:54 AM

Customer: VERIZON WIRELESS

**Load Case:** 1.2D + 1.0Di + 1.0Wi

50 mph with 0.75 in Radial Ice

22 Iterations

Gust Response Factor :1.10

Ice Dead Load Factor :1.00

Wind Importance Factor :1.00

Dead Load Factor :1.20

Ice Importance Factor :1.00

Wind Load Factor :1.00

**Shaft Segment Forces (Factored)**

Seg Top Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Ap (sf)	EPAs (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	5.168	5.685	0.000	1.200	0.000	0.00	0.000	0.00	68.4	0.0	0.0
5.00		1.00	0.85	5.168	5.685	0.000	1.200	1.159	5.00	20.045	24.05	135.4	331.4	1,238.2
10.00		1.00	0.85	5.168	5.685	0.000	1.200	1.293	5.00	19.645	23.57	132.5	361.1	1,243.4
15.00		1.00	0.85	5.168	5.685	0.000	1.200	1.361	5.00	19.189	23.03	131.3	370.3	1,228.1
20.00		1.00	0.87	5.331	5.865	0.000	1.200	1.408	5.00	18.715	22.46	133.5	372.7	1,205.9
25.00		1.00	0.92	5.621	6.183	0.000	1.200	1.444	5.00	18.233	21.88	136.3	371.5	1,180.3
30.00		1.00	0.96	5.864	6.450	0.000	1.200	1.473	5.00	17.745	21.29	137.8	368.1	1,152.4
35.00		1.00	0.99	6.074	6.681	0.000	1.200	1.498	5.00	17.253	20.70	138.4	363.2	1,122.9
40.00		1.00	1.02	6.259	6.885	0.000	1.200	1.519	5.00	16.759	20.11	138.2	357.1	1,092.3
45.00		1.00	1.05	6.426	7.069	0.000	1.200	1.538	5.00	16.262	19.51	117.0	350.1	1,060.8
48.50	Bot - Section 2	1.00	1.07	6.557	7.212	0.000	1.200	1.553	3.50	11.087	13.30	68.7	241.8	724.6
50.00		1.00	1.09	6.629	7.292	0.000	1.200	1.561	1.50	4.740	5.69	65.4	104.6	473.2
53.25	Top - Section 1	1.00	1.10	6.695	7.365	0.000	1.200	1.569	3.25	10.117	12.14	68.6	222.7	1,007.7
55.00		1.00	1.11	6.762	7.438	0.000	1.200	1.576	1.75	5.360	6.43	91.6	119.0	305.2
60.00		1.00	1.12	6.849	7.534	0.000	1.200	1.586	5.00	14.976	17.97	134.3	330.2	849.0
65.00		1.00	1.14	6.970	7.667	0.000	1.200	1.599	5.00	14.475	17.37	131.9	321.0	820.1
70.00		1.00	1.16	7.084	7.792	0.000	1.200	1.611	5.00	13.973	16.77	129.3	311.3	790.9
75.00		1.00	1.18	7.191	7.910	0.000	1.200	1.623	5.00	13.470	16.16	126.3	301.4	761.3
80.00		1.00	1.19	7.293	8.022	0.000	1.200	1.634	5.00	12.967	15.56	123.2	291.1	731.4
85.00		1.00	1.21	7.390	8.129	0.000	1.200	1.644	5.00	12.463	14.96	119.8	280.5	701.2
90.00		1.00	1.23	7.482	8.230	0.000	1.200	1.654	5.00	11.959	14.35	116.3	269.7	670.8
95.00		1.00	1.24	7.570	8.327	0.000	1.200	1.663	5.00	11.454	13.74	98.9	258.7	640.2
98.75	Bot - Section 3	1.00	1.25	7.644	8.408	0.000	1.200	1.671	3.75	8.259	9.91	55.5	187.9	461.1
100.0	Appertunance(s)	1.00	1.26	7.685	8.453	0.000	1.200	1.675	1.25	2.730	3.28	35.7	63.0	219.4
102.0	Top - Section 2	1.00	1.26	7.711	8.482	0.000	1.200	1.678	2.00	4.301	5.16	54.1	98.9	344.7
105.0		1.00	1.27	7.751	8.526	0.000	1.200	1.682	3.00	6.301	7.56	84.3	144.2	299.6
110.0		1.00	1.28	7.813	8.594	0.000	1.200	1.688	5.00	10.096	12.12	102.0	228.4	475.7
115.0		1.00	1.29	7.888	8.677	0.000	1.200	1.696	5.00	9.590	11.51	88.3	216.7	449.2
119.0	Appertunance(s)	1.00	1.30	7.954	8.749	0.000	1.200	1.702	4.00	7.308	8.77	38.4	165.8	341.3
Totals:									119.00			3,001.4	7,402.4	21,590.9

<b>Load Case:</b> 1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice	22 Iterations
Gust Response Factor :1.10	Ice Dead Load Factor :1.00	Wind Importance Factor :1.00
Dead Load Factor :1.20		Ice Importance Factor :1.00
Wind Load Factor :1.00		

**Applied Segment Forces Summary**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		68.4	0.0					0.0	0.0	68.4	0.0	0.0	0.0
5.00		135.4	1,238.2					0.0	221.7	135.4	1,459.9	0.0	0.0
10.00		132.5	1,243.4					0.0	221.7	132.5	1,465.1	0.0	0.0
15.00		131.3	1,228.1					0.0	221.7	131.3	1,449.8	0.0	0.0
20.00		133.5	1,205.9					0.0	221.7	133.5	1,427.6	0.0	0.0
25.00		136.3	1,180.3					0.0	221.7	136.3	1,402.0	0.0	0.0
30.00		137.8	1,152.4					0.0	221.7	137.8	1,374.1	0.0	0.0
35.00		138.4	1,122.9					0.0	221.7	138.4	1,344.6	0.0	0.0
40.00		138.2	1,092.3					0.0	221.7	138.2	1,314.0	0.0	0.0
45.00		117.0	1,060.8					0.0	221.7	117.0	1,282.5	0.0	0.0
48.50	Bot - Section 2	68.7	724.6					0.0	155.2	68.7	879.8	0.0	0.0
50.00		65.4	473.2					0.0	66.5	65.4	539.7	0.0	0.0
53.25	Top - Section 1	68.6	1,007.7					0.0	144.1	68.6	1,151.8	0.0	0.0
55.00		91.6	305.2					0.0	77.6	91.6	382.8	0.0	0.0
60.00		134.3	849.0					0.0	221.7	134.3	1,070.7	0.0	0.0
65.00		131.9	820.1					0.0	221.7	131.9	1,041.8	0.0	0.0
70.00		129.3	790.9					0.0	221.7	129.3	1,012.6	0.0	0.0
75.00		126.3	761.3					0.0	221.7	126.3	983.0	0.0	0.0
80.00		123.2	731.4					0.0	221.7	123.2	953.1	0.0	0.0
85.00		119.8	701.2					0.0	221.7	119.8	922.9	0.0	0.0
90.00		116.3	670.8					0.0	221.7	116.3	892.5	0.0	0.0
95.00		98.9	640.2					0.0	221.7	98.9	861.9	0.0	0.0
98.75	Bot - Section 3	55.5	461.1					0.0	166.3	55.5	627.4	0.0	0.0
100.00	Appertunance(s)	35.7	219.4	984.9	0.0	0.0	6,474.1	0.0	55.4	1,020.6	6,748.9	0.0	0.0
102.00	Top - Section 2	54.1	344.7					0.0	58.8	54.1	403.5	0.0	0.0
105.00		84.3	299.6					0.0	88.2	84.3	387.8	0.0	0.0
110.00		102.0	475.7					0.0	147.1	102.0	622.8	0.0	0.0
115.00		88.3	449.2					0.0	147.1	88.3	596.3	0.0	0.0
119.00	Appertunance(s)	38.4	341.3	1,281.5	0.0	-569.7	7,440.3	0.0	117.6	1,319.9	7,899.2	0.0	0.0
<b>Totals:</b>										5,267.79	40,498.1	0.00	0.00



Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 0.75 in Radial Ice

22 Iterations

Gust Response Factor :1.10

Ice Dead Load Factor :1.00

Wind Importance Factor :1.00

Dead Load Factor :1.20

Ice Importance Factor :1.00

Wind Load Factor :1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-40.50	-5.22	0.00	-448.86	0.00	448.86	2,946.72	1,473.36	5,500.90	2,754.54	0.00	0.00	0.177
5.00	-39.03	-5.12	0.00	-422.77	0.00	422.77	2,899.79	1,449.90	5,267.87	2,637.85	0.03	-0.05	0.174
10.00	-37.56	-5.02	0.00	-397.18	0.00	397.18	2,851.12	1,425.56	5,036.47	2,521.98	0.11	-0.11	0.171
15.00	-36.11	-4.92	0.00	-372.08	0.00	372.08	2,800.72	1,400.36	4,806.98	2,407.06	0.25	-0.16	0.167
20.00	-34.68	-4.82	0.00	-347.48	0.00	347.48	2,748.57	1,374.29	4,579.65	2,293.23	0.45	-0.22	0.164
25.00	-33.27	-4.71	0.00	-323.40	0.00	323.40	2,694.69	1,347.35	4,354.74	2,180.61	0.71	-0.28	0.161
30.00	-31.89	-4.59	0.00	-299.86	0.00	299.86	2,639.07	1,319.54	4,132.51	2,069.33	1.03	-0.33	0.157
35.00	-30.54	-4.48	0.00	-276.89	0.00	276.89	2,581.72	1,290.86	3,913.23	1,959.52	1.41	-0.39	0.153
40.00	-29.23	-4.36	0.00	-254.49	0.00	254.49	2,522.63	1,261.31	3,697.16	1,851.33	1.86	-0.45	0.149
45.00	-27.94	-4.26	0.00	-232.68	0.00	232.68	2,461.80	1,230.90	3,484.55	1,744.87	2.36	-0.51	0.145
48.50	-27.06	-4.20	0.00	-217.77	0.00	217.77	2,418.18	1,209.09	3,337.93	1,671.45	2.76	-0.56	0.141
50.00	-26.52	-4.14	0.00	-211.47	0.00	211.47	2,399.23	1,199.61	3,275.68	1,640.27	2.93	-0.58	0.140
53.25	-25.36	-4.07	0.00	-198.01	0.00	198.01	1,780.50	890.25	2,418.90	1,211.25	3.34	-0.62	0.178
55.00	-24.98	-4.00	0.00	-190.88	0.00	190.88	1,765.87	882.93	2,368.02	1,185.77	3.57	-0.64	0.175
60.00	-23.90	-3.88	0.00	-170.88	0.00	170.88	1,722.87	861.43	2,223.96	1,113.63	4.28	-0.71	0.167
65.00	-22.86	-3.77	0.00	-151.46	0.00	151.46	1,678.13	839.06	2,082.05	1,042.57	5.07	-0.79	0.159
70.00	-21.84	-3.65	0.00	-132.62	0.00	132.62	1,631.65	815.83	1,942.57	972.73	5.93	-0.86	0.150
75.00	-20.86	-3.54	0.00	-114.37	0.00	114.37	1,583.44	791.72	1,805.76	904.22	6.87	-0.93	0.140
80.00	-19.90	-3.42	0.00	-96.69	0.00	96.69	1,533.49	766.75	1,671.90	837.19	7.89	-1.00	0.128
85.00	-18.98	-3.31	0.00	-79.59	0.00	79.59	1,481.81	740.90	1,541.24	771.77	8.97	-1.07	0.116
90.00	-18.09	-3.19	0.00	-63.06	0.00	63.06	1,423.78	711.89	1,409.49	705.79	10.13	-1.13	0.102
95.00	-17.22	-3.09	0.00	-47.11	0.00	47.11	1,352.39	676.20	1,271.00	636.45	11.34	-1.19	0.087
98.75	-16.60	-3.03	0.00	-35.53	0.00	35.53	1,298.85	649.43	1,171.84	586.79	12.29	-1.22	0.073
100.00	-9.87	-1.86	0.00	-31.75	0.00	31.75	1,281.00	640.50	1,139.67	570.68	12.61	-1.23	0.063
102.00	-9.47	-1.80	0.00	-28.02	0.00	28.02	915.93	457.96	815.42	408.32	13.13	-1.25	0.079
105.00	-9.08	-1.72	0.00	-22.61	0.00	22.61	894.26	447.13	769.22	385.18	13.92	-1.27	0.069
110.00	-8.46	-1.60	0.00	-14.04	0.00	14.04	856.75	428.37	693.99	347.51	15.28	-1.31	0.050
115.00	-7.87	-1.50	0.00	-6.02	0.00	6.02	817.50	408.75	621.20	311.06	16.66	-1.34	0.029
119.00	0.00	-1.32	0.00	0.00	0.00	0.00	776.64	388.32	559.00	279.91	17.79	-1.34	0.000

Site Number: 283422

Code: ANSI/TIA-222-G

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Site Name: SHORT BEACH BRANFORD CT, Engineering Number: OAA641909\_C3\_02

6/29/2017 11:31:55 AM

Customer: VERIZON WIRELESS

Load Case: 1.0D + 1.0W

Serviceability 60 mph

21 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :1.00

Wind Load Factor :1.00

**Shaft Segment Forces (Factored)**

Seg Top Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Ap (sf)	EPAs (sf)	Wind Force X (lb)	Dead Load (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	7.442	8.186	213.91	0.650	0.000	0.00	0.000	0.00	50.8	0.0	0.0
5.00		1.00	0.85	7.442	8.186	211.08	0.650	0.000	5.00	19.079	12.40	100.2	0.0	755.7
10.00		1.00	0.85	7.442	8.186	205.41	0.650	0.000	5.00	18.567	12.07	97.4	0.0	735.3
15.00		1.00	0.85	7.442	8.186	199.74	0.650	0.000	5.00	18.054	11.74	96.2	0.0	714.8
20.00		1.00	0.87	7.677	8.445	197.12	0.650	0.000	5.00	17.542	11.40	97.4	0.0	694.4
25.00		1.00	0.92	8.094	8.904	196.49	0.650	0.000	5.00	17.030	11.07	99.1	0.0	674.0
30.00		1.00	0.96	8.444	9.288	194.65	0.650	0.000	5.00	16.517	10.74	99.9	0.0	653.5
35.00		1.00	0.99	8.746	9.621	191.95	0.650	0.000	5.00	16.005	10.40	100.0	0.0	633.1
40.00		1.00	1.02	9.013	9.915	188.63	0.650	0.000	5.00	15.493	10.07	99.5	0.0	612.6
45.00		1.00	1.05	9.254	10.18	184.81	0.650	0.000	5.00	14.980	9.74	83.9	0.0	592.2
48.50	Bot - Section 2	1.00	1.07	9.442	10.38	181.25	0.650	0.000	3.50	10.181	6.62	49.2	0.0	402.4
50.00		1.00	1.09	9.546	10.50	179.03	0.650	0.000	1.50	4.350	2.83	46.8	0.0	307.2
53.25	Top - Section 1	1.00	1.10	9.641	10.60	176.86	0.650	0.000	3.25	9.267	6.02	49.0	0.0	654.2
55.00		1.00	1.11	9.737	10.71	177.18	0.650	0.000	1.75	4.900	3.19	65.2	0.0	155.2
60.00		1.00	1.12	9.862	10.84	173.90	0.650	0.000	5.00	13.655	8.88	95.3	0.0	432.3
65.00		1.00	1.14	10.037	11.04	168.85	0.650	0.000	5.00	13.142	8.54	93.2	0.0	416.0
70.00		1.00	1.16	10.201	11.22	163.59	0.650	0.000	5.00	12.630	8.21	90.9	0.0	399.6
75.00		1.00	1.18	10.355	11.39	158.14	0.650	0.000	5.00	12.118	7.88	88.4	0.0	383.3
80.00		1.00	1.19	10.502	11.55	152.52	0.650	0.000	5.00	11.605	7.54	85.8	0.0	366.9
85.00		1.00	1.21	10.641	11.70	146.75	0.650	0.000	5.00	11.093	7.21	83.0	0.0	350.6
90.00		1.00	1.23	10.774	11.85	140.84	0.650	0.000	5.00	10.581	6.88	80.0	0.0	334.2
95.00		1.00	1.24	10.900	11.99	134.80	0.650	0.000	5.00	10.068	6.54	67.6	0.0	317.9
98.75	Bot - Section 3	1.00	1.25	11.007	12.10	129.43	0.650	0.000	3.75	7.215	4.69	37.8	0.0	227.7
100.0	Appertunance(s)	1.00	1.26	11.066	12.17	126.32	0.650	0.000	1.25	2.381	1.55	24.3	0.0	130.3
102.0	Top - Section 2	1.00	1.26	11.104	12.21	124.29	0.650	0.000	2.00	3.742	2.43	36.6	0.0	204.8
105.0		1.00	1.27	11.161	12.27	123.29	0.650	0.000	3.00	5.460	3.55	56.7	0.0	129.5
110.0		1.00	1.28	11.251	12.37	118.20	0.650	0.000	5.00	8.690	5.65	68.2	0.0	206.1
115.0		1.00	1.29	11.359	12.49	111.77	0.650	0.000	5.00	8.177	5.32	58.5	0.0	193.8
119.0	Appertunance(s)	1.00	1.30	11.453	12.59	105.90	0.650	0.000	4.00	6.173	4.01	25.3	0.0	146.2
Totals:									119.00			2,126.1	0.0	11,823.7

**Load Case:** 1.0D + 1.0W

Serviceability 60 mph

21 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :1.00

Wind Load Factor :1.00

**Applied Segment Forces Summary**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		50.8	0.0					0.0	0.0	50.8	0.0	0.0	0.0
5.00		100.2	755.7					0.0	184.7	100.2	940.4	0.0	0.0
10.00		97.4	735.3					0.0	184.7	97.4	920.0	0.0	0.0
15.00		96.2	714.8					0.0	184.7	96.2	899.6	0.0	0.0
20.00		97.4	694.4					0.0	184.7	97.4	879.1	0.0	0.0
25.00		99.1	674.0					0.0	184.7	99.1	858.7	0.0	0.0
30.00		99.9	653.5					0.0	184.7	99.9	838.3	0.0	0.0
35.00		100.0	633.1					0.0	184.7	100.0	817.8	0.0	0.0
40.00		99.5	612.6					0.0	184.7	99.5	797.4	0.0	0.0
45.00		83.9	592.2					0.0	184.7	83.9	777.0	0.0	0.0
48.50	Bot - Section 2	49.2	402.4					0.0	129.3	49.2	531.7	0.0	0.0
50.00		46.8	307.2					0.0	55.4	46.8	362.6	0.0	0.0
53.25	Top - Section 1	49.0	654.2					0.0	120.1	49.0	774.3	0.0	0.0
55.00		65.2	155.2					0.0	64.7	65.2	219.8	0.0	0.0
60.00		95.3	432.3					0.0	184.7	95.3	617.1	0.0	0.0
65.00		93.2	416.0					0.0	184.7	93.2	600.7	0.0	0.0
70.00		90.9	399.6					0.0	184.7	90.9	584.4	0.0	0.0
75.00		88.4	383.3					0.0	184.7	88.4	568.0	0.0	0.0
80.00		85.8	366.9					0.0	184.7	85.8	551.7	0.0	0.0
85.00		83.0	350.6					0.0	184.7	83.0	535.3	0.0	0.0
90.00		80.0	334.2					0.0	184.7	80.0	519.0	0.0	0.0
95.00		67.6	317.9					0.0	184.7	67.6	502.6	0.0	0.0
98.75	Bot - Section 3	37.8	227.7					0.0	138.6	37.8	366.2	0.0	0.0
100.00	Appertunance(s)	24.3	130.3	1,054.2	0.0	0.0	2,525.5	0.0	46.2	1,078.5	2,702.0	0.0	0.0
102.00	Top - Section 2	36.6	204.8					0.0	49.0	36.6	253.9	0.0	0.0
105.00		56.7	129.5					0.0	73.5	56.7	203.0	0.0	0.0
110.00		68.2	206.1					0.0	122.5	68.2	328.6	0.0	0.0
115.00		58.5	193.8					0.0	122.5	58.5	316.3	0.0	0.0
119.00	Appertunance(s)	25.3	146.2	1,417.2	0.0	-770.9	2,278.2	0.0	98.0	1,442.4	2,522.4	0.0	0.0
<b>Totals:</b>										<b>4,597.54</b>	<b>20,788.1</b>	<b>0.00</b>	<b>0.00</b>

Load Case: 1.0D + 1.0W

Serviceability 60 mph

21 Iterations

Gust Response Factor :1.10

Wind Importance Factor 1.00

Dead Load Factor :1.00

Wind Load Factor :1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-20.79	-4.55	0.00	-402.96	0.00	402.96	2,946.72	1,473.36	5,500.90	2,754.54	0.00	0.00	0.153
5.00	-19.84	-4.47	0.00	-380.19	0.00	380.19	2,899.79	1,449.90	5,267.87	2,637.85	0.03	-0.05	0.151
10.00	-18.92	-4.39	0.00	-357.83	0.00	357.83	2,851.12	1,425.56	5,036.47	2,521.98	0.10	-0.10	0.149
15.00	-18.02	-4.31	0.00	-335.89	0.00	335.89	2,800.72	1,400.36	4,806.98	2,407.06	0.23	-0.15	0.146
20.00	-17.13	-4.22	0.00	-314.36	0.00	314.36	2,748.57	1,374.29	4,579.65	2,293.23	0.41	-0.20	0.143
25.00	-16.27	-4.13	0.00	-293.25	0.00	293.25	2,694.69	1,347.35	4,354.74	2,180.61	0.64	-0.25	0.141
30.00	-15.43	-4.04	0.00	-272.58	0.00	272.58	2,639.07	1,319.54	4,132.51	2,069.33	0.93	-0.30	0.138
35.00	-14.61	-3.95	0.00	-252.36	0.00	252.36	2,581.72	1,290.86	3,913.23	1,959.52	1.27	-0.35	0.134
40.00	-13.81	-3.86	0.00	-232.59	0.00	232.59	2,522.63	1,261.31	3,697.16	1,851.33	1.68	-0.41	0.131
45.00	-13.03	-3.78	0.00	-213.28	0.00	213.28	2,461.80	1,230.90	3,484.55	1,744.87	2.13	-0.47	0.128
48.50	-12.50	-3.74	0.00	-200.04	0.00	200.04	2,418.18	1,209.09	3,337.93	1,671.45	2.49	-0.51	0.125
50.00	-12.13	-3.69	0.00	-194.44	0.00	194.44	2,399.23	1,199.61	3,275.68	1,640.27	2.65	-0.52	0.124
53.25	-11.36	-3.64	0.00	-182.44	0.00	182.44	1,780.50	890.25	2,418.90	1,211.25	3.02	-0.56	0.157
55.00	-11.13	-3.58	0.00	-176.07	0.00	176.07	1,765.87	882.93	2,368.02	1,185.77	3.23	-0.58	0.155
60.00	-10.51	-3.49	0.00	-158.16	0.00	158.16	1,722.87	861.43	2,223.96	1,113.63	3.88	-0.65	0.148
65.00	-9.91	-3.40	0.00	-140.69	0.00	140.69	1,678.13	839.06	2,082.05	1,042.57	4.59	-0.72	0.141
70.00	-9.32	-3.32	0.00	-123.67	0.00	123.67	1,631.65	815.83	1,942.57	972.73	5.38	-0.79	0.133
75.00	-8.75	-3.23	0.00	-107.09	0.00	107.09	1,583.44	791.72	1,805.76	904.22	6.24	-0.85	0.124
80.00	-8.20	-3.15	0.00	-90.93	0.00	90.93	1,533.49	766.75	1,671.90	837.19	7.17	-0.92	0.114
85.00	-7.66	-3.06	0.00	-75.21	0.00	75.21	1,481.81	740.90	1,541.24	771.77	8.17	-0.98	0.103
90.00	-7.14	-2.98	0.00	-59.90	0.00	59.90	1,423.78	711.89	1,409.49	705.79	9.23	-1.04	0.090
95.00	-6.64	-2.91	0.00	-45.00	0.00	45.00	1,352.39	676.20	1,271.00	636.45	10.35	-1.09	0.076
98.75	-6.27	-2.87	0.00	-34.10	0.00	34.10	1,298.85	649.43	1,171.84	586.79	11.22	-1.13	0.063
100.00	-3.59	-1.73	0.00	-30.52	0.00	30.52	1,281.00	640.50	1,139.67	570.68	11.52	-1.14	0.056
102.00	-3.34	-1.69	0.00	-27.05	0.00	27.05	915.93	457.96	815.42	408.32	12.00	-1.15	0.070
105.00	-3.13	-1.63	0.00	-21.97	0.00	21.97	894.26	447.13	769.22	385.18	12.73	-1.18	0.061
110.00	-2.81	-1.56	0.00	-13.79	0.00	13.79	856.75	428.37	693.99	347.51	13.98	-1.21	0.043
115.00	-2.49	-1.50	0.00	-5.99	0.00	5.99	817.50	408.75	621.20	311.06	15.27	-1.24	0.022
119.00	0.00	-1.44	0.00	0.00	0.00	0.00	776.64	388.32	559.00	279.91	16.31	-1.24	0.000

Site Number: 283422

Code: ANSI/TIA-222-G

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Site Name: SHORT BEACH BRANFORD CT, Engineering Number: OAA641909\_C3\_02

6/29/2017 11:31:56 AM

Customer: VERIZON WIRELESS

### Equivalent Lateral Forces Method Analysis

(Based on ASCE7-10 Chapters 11, 12, 15)

Spectral Response Acceleration for Short Period ( $S_g$ ):	0.18
Spectral Response Acceleration at 1.0 Second Period ( $S_1$ ):	0.06
Long-Period Transition Period ( $T_L$ ):	6
Importance Factor ( $I_E$ ):	1.00
Site Coefficient $F_a$ :	1.60
Site Coefficient $F_v$ :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period ( $S_{ds}$ ):	0.19
Design Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.10
Seismic Response Coefficient ( $C_s$ ):	0.04
Upper Limit $C_s$	0.04
Lower Limit $C_s$	0.03
Period based on Rayleigh Method (sec):	1.81
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	1.66
Total Unfactored Dead Load:	20.79 k
Seismic Base Shear (E):	0.97 k

#### Load Case (1.2 + 0.2Sds) \* DL + E ELM

#### Seismic Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	$W_z$ (lb-ft)	$C_{vx}$	Horizontal Force (lb)	Vertical Force (lb)
28	117.00	244	649	0.027	26	302
27	112.50	316	787	0.033	32	392
26	107.50	329	759	0.032	31	407
25	103.50	203	440	0.018	18	251
24	101.00	254	529	0.022	21	314
23	99.38	177	358	0.015	14	219
22	96.88	366	712	0.030	29	454
21	92.50	503	905	0.038	37	622
20	87.50	519	852	0.035	34	643
19	82.50	535	797	0.033	32	663
18	77.50	552	741	0.031	30	683
17	72.50	568	683	0.028	28	703
16	67.50	584	624	0.026	25	724
15	62.50	601	565	0.023	23	744
14	57.50	617	506	0.021	20	764
13	54.13	220	163	0.007	7	272
12	51.63	774	531	0.022	21	959
11	49.25	363	230	0.010	9	449
10	46.75	532	309	0.013	12	658
9	42.50	777	386	0.016	16	962
8	37.50	797	322	0.013	13	987
7	32.50	818	261	0.011	11	1,013
6	27.50	838	203	0.008	8	1,038

Site Number: 283422

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Site Name: SHORT BEACH BRANFORD CT, CEEngineering Number:OAA641909\_C3\_02

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Customer: VERIZON WIRELESS

5	22.50	859	149	0.006	6	1,063
4	17.50	879	100	0.004	4	1,089
3	12.50	900	59	0.002	2	1,114
2	7.50	920	26	0.001	1	1,139
1	2.50	940	4	0.000	0	1,165
Raycap DC6-48-60-18-	119.00	60	164	0.007	7	74
Ericsson RRUS 11 (w/	119.00	675	1,844	0.077	74	836
Andrew SBNH-1D6565C	119.00	793	2,167	0.090	87	982
Round T-Arm	119.00	750	2,049	0.085	83	929
Alcatel-Lucent RRH2x	100.00	132	270	0.011	11	163
Alcatel-Lucent RRH2x	100.00	170	348	0.014	14	211
Alcatel-Lucent PCS B	100.00	165	338	0.014	14	204
RFS DB-T1-6Z-8AB-0Z	100.00	88	180	0.007	7	109
Antel BXA-70063-6CF-	100.00	51	104	0.004	4	63
Andrew LNX-6514DS-A1	100.00	115	236	0.010	10	143
Commscope SBNHH-1D65	100.00	304	623	0.026	25	377
Round Low Profile PI	100.00	1,500	3,072	0.128	124	1,858
		20,788	24,046	1.000	971	25,744

Load Case (0.9 - 0.2Sds) \* DL + E ELFM

Seismic (Reduced DL) Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W <sub>z</sub> (lb-ft)	C <sub>vx</sub>	Horizontal Force (lb)	Vertical Force (lb)
28	117.00	244	649	0.027	26	210
27	112.50	316	787	0.033	32	273
26	107.50	329	759	0.032	31	283
25	103.50	203	440	0.018	18	175
24	101.00	254	529	0.022	21	219
23	99.38	177	358	0.015	14	152
22	96.88	366	712	0.030	29	316
21	92.50	503	905	0.038	37	433
20	87.50	519	852	0.035	34	447
19	82.50	535	797	0.033	32	461
18	77.50	552	741	0.031	30	475
17	72.50	568	683	0.028	28	489
16	67.50	584	624	0.026	25	503
15	62.50	601	565	0.023	23	518
14	57.50	617	506	0.021	20	532
13	54.13	220	163	0.007	7	189
12	51.63	774	531	0.022	21	667
11	49.25	363	230	0.010	9	312
10	46.75	532	309	0.013	12	458
9	42.50	777	386	0.016	16	669
8	37.50	797	322	0.013	13	687
7	32.50	818	261	0.011	11	705
6	27.50	838	203	0.008	8	722
5	22.50	859	149	0.006	6	740
4	17.50	879	100	0.004	4	757
3	12.50	900	59	0.002	2	775
2	7.50	920	26	0.001	1	793
1	2.50	940	4	0.000	0	810
Raycap DC6-48-60-18-	119.00	60	164	0.007	7	52
Ericsson RRUS 11 (w/	119.00	675	1,844	0.077	74	582
Andrew SBNH-1D6565C	119.00	793	2,167	0.090	87	683
Round T-Arm	119.00	750	2,049	0.085	83	646
Alcatel-Lucent RRH2x	100.00	132	270	0.011	11	114
Alcatel-Lucent RRH2x	100.00	170	348	0.014	14	147
Alcatel-Lucent PCS B	100.00	165	338	0.014	14	142
RFS DB-T1-6Z-8AB-0Z	100.00	88	180	0.007	7	76
Antel BXA-70063-6CF-	100.00	51	104	0.004	4	44

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Site Number: 283422

Code: ANSI/TIA-222-G

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Site Name: SHORT BEACH BRANFORD CT, CT Engineering Number: OAA641909\_C3\_02

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Customer: VERIZON WIRELESS

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Andrew LNX-6514DS-A1	100.00	115	236	0.010	10	99
Commscope SBNHH-1D65	100.00	304	623	0.026	25	262
Round Low Profile PI	100.00	1,500	3,072	0.128	124	1,292
		20,788	24,046	1.000	971	17,911

Load Case (1.2 + 0.2Sds) \* DL + E ELFM Seismic Equivalent Lateral Forces Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-24.58	-0.97	0.00	-92.85	0.00	92.85	2,946.72	1,473.36	5,500.90	2,754.54	0.00	0.00	0.042
5.00	-23.44	-0.98	0.00	-87.98	0.00	87.98	2,899.79	1,449.90	5,267.87	2,637.85	0.01	-0.01	0.041
10.00	-22.33	-0.98	0.00	-83.11	0.00	83.11	2,851.12	1,425.56	5,036.47	2,521.98	0.02	-0.02	0.041
15.00	-21.24	-0.98	0.00	-78.22	0.00	78.22	2,800.72	1,400.36	4,806.98	2,407.06	0.05	-0.03	0.040
20.00	-20.17	-0.97	0.00	-73.33	0.00	73.33	2,748.57	1,374.29	4,579.65	2,293.23	0.09	-0.05	0.039
25.00	-19.13	-0.97	0.00	-68.46	0.00	68.46	2,694.69	1,347.35	4,354.74	2,180.61	0.15	-0.06	0.038
30.00	-18.12	-0.96	0.00	-63.61	0.00	63.61	2,639.07	1,319.54	4,132.51	2,069.33	0.22	-0.07	0.038
35.00	-17.13	-0.95	0.00	-58.80	0.00	58.80	2,581.72	1,290.86	3,913.23	1,959.52	0.30	-0.08	0.037
40.00	-16.17	-0.94	0.00	-54.04	0.00	54.04	2,522.63	1,261.31	3,697.16	1,851.33	0.39	-0.10	0.036
45.00	-15.51	-0.93	0.00	-49.35	0.00	49.35	2,461.80	1,230.90	3,484.55	1,744.87	0.50	-0.11	0.035
48.50	-15.06	-0.92	0.00	-46.11	0.00	46.11	2,418.18	1,209.09	3,337.93	1,671.45	0.58	-0.12	0.034
50.00	-14.10	-0.90	0.00	-44.73	0.00	44.73	2,399.23	1,199.61	3,275.68	1,640.27	0.62	-0.12	0.033
53.25	-13.83	-0.89	0.00	-41.81	0.00	41.81	1,780.50	890.25	2,418.90	1,211.25	0.70	-0.13	0.042
55.00	-13.07	-0.87	0.00	-40.25	0.00	40.25	1,765.87	882.93	2,368.02	1,185.77	0.75	-0.13	0.041
60.00	-12.32	-0.85	0.00	-35.90	0.00	35.90	1,722.87	861.43	2,223.96	1,113.63	0.90	-0.15	0.039
65.00	-11.60	-0.83	0.00	-31.64	0.00	31.64	1,678.13	839.06	2,082.05	1,042.57	1.07	-0.17	0.037
70.00	-10.90	-0.80	0.00	-27.51	0.00	27.51	1,631.65	815.83	1,942.57	972.73	1.25	-0.18	0.035
75.00	-10.21	-0.77	0.00	-23.52	0.00	23.52	1,583.44	791.72	1,805.76	904.22	1.45	-0.20	0.032
80.00	-9.55	-0.74	0.00	-19.67	0.00	19.67	1,533.49	766.75	1,671.90	837.19	1.66	-0.21	0.030
85.00	-8.91	-0.70	0.00	-15.98	0.00	15.98	1,481.81	740.90	1,541.24	771.77	1.89	-0.22	0.027
90.00	-8.29	-0.67	0.00	-12.46	0.00	12.46	1,423.78	711.89	1,409.49	705.79	2.13	-0.24	0.023
95.00	-7.83	-0.64	0.00	-9.13	0.00	9.13	1,352.39	676.20	1,271.00	636.45	2.38	-0.25	0.020
98.75	-7.61	-0.62	0.00	-6.75	0.00	6.75	1,298.85	649.43	1,171.84	586.79	2.58	-0.25	0.017
100.00	-4.17	-0.38	0.00	-5.97	0.00	5.97	1,281.00	640.50	1,139.67	570.68	2.65	-0.26	0.014
102.00	-3.92	-0.36	0.00	-5.22	0.00	5.22	915.93	457.96	815.42	408.32	2.75	-0.26	0.017
105.00	-3.51	-0.33	0.00	-4.15	0.00	4.15	894.26	447.13	769.22	385.18	2.92	-0.26	0.015
110.00	-3.12	-0.29	0.00	-2.52	0.00	2.52	856.75	428.37	693.99	347.51	3.20	-0.27	0.011
115.00	-2.82	-0.26	0.00	-1.06	0.00	1.06	817.50	408.75	621.20	311.06	3.48	-0.27	0.007
119.00	0.00	-0.25	0.00	0.00	0.00	0.00	776.64	388.32	559.00	279.91	3.71	-0.28	0.000



Load Case (0.9 - 0.2Sds) \* DL + E ELFM      Seismic (Reduced DL) Equivalent Lateral Forces Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-17.10	-0.97	0.00	-91.92	0.00	91.92	2,946.72	1,473.36	5,500.90	2,754.54	0.00	0.00	0.039
5.00	-16.31	-0.97	0.00	-87.07	0.00	87.07	2,899.79	1,449.90	5,267.87	2,637.85	0.01	-0.01	0.039
10.00	-15.53	-0.97	0.00	-82.20	0.00	82.20	2,851.12	1,425.56	5,036.47	2,521.98	0.02	-0.02	0.038
15.00	-14.77	-0.97	0.00	-77.33	0.00	77.33	2,800.72	1,400.36	4,806.98	2,407.06	0.05	-0.03	0.037
20.00	-14.03	-0.97	0.00	-72.46	0.00	72.46	2,748.57	1,374.29	4,579.65	2,293.23	0.09	-0.05	0.037
25.00	-13.31	-0.96	0.00	-67.62	0.00	67.62	2,694.69	1,347.35	4,354.74	2,180.61	0.15	-0.06	0.036
30.00	-12.61	-0.95	0.00	-62.80	0.00	62.80	2,639.07	1,319.54	4,132.51	2,069.33	0.21	-0.07	0.035
35.00	-11.92	-0.94	0.00	-58.03	0.00	58.03	2,581.72	1,290.86	3,913.23	1,959.52	0.29	-0.08	0.034
40.00	-11.25	-0.93	0.00	-53.31	0.00	53.31	2,522.63	1,261.31	3,697.16	1,851.33	0.38	-0.09	0.033
45.00	-10.79	-0.92	0.00	-48.67	0.00	48.67	2,461.80	1,230.90	3,484.55	1,744.87	0.49	-0.11	0.032
48.50	-10.48	-0.91	0.00	-45.46	0.00	45.46	2,418.18	1,209.09	3,337.93	1,671.45	0.57	-0.12	0.032
50.00	-9.81	-0.89	0.00	-44.09	0.00	44.09	2,399.23	1,199.61	3,275.68	1,640.27	0.61	-0.12	0.031
53.25	-9.62	-0.88	0.00	-41.21	0.00	41.21	1,780.50	890.25	2,418.90	1,211.25	0.69	-0.13	0.039
55.00	-9.09	-0.86	0.00	-39.67	0.00	39.67	1,765.87	882.93	2,368.02	1,185.77	0.74	-0.13	0.039
60.00	-8.57	-0.84	0.00	-35.36	0.00	35.36	1,722.87	861.43	2,223.96	1,113.63	0.89	-0.15	0.037
65.00	-8.07	-0.82	0.00	-31.16	0.00	31.16	1,678.13	839.06	2,082.05	1,042.57	1.05	-0.16	0.035
70.00	-7.58	-0.79	0.00	-27.08	0.00	27.08	1,631.65	815.83	1,942.57	972.73	1.23	-0.18	0.032
75.00	-7.11	-0.76	0.00	-23.14	0.00	23.14	1,583.44	791.72	1,805.76	904.22	1.43	-0.19	0.030
80.00	-6.64	-0.73	0.00	-19.35	0.00	19.35	1,533.49	766.75	1,671.90	837.19	1.64	-0.21	0.027
85.00	-6.20	-0.69	0.00	-15.72	0.00	15.72	1,481.81	740.90	1,541.24	771.77	1.86	-0.22	0.025
90.00	-5.76	-0.65	0.00	-12.26	0.00	12.26	1,423.78	711.89	1,409.49	705.79	2.10	-0.23	0.021
95.00	-5.45	-0.63	0.00	-8.99	0.00	8.99	1,352.39	676.20	1,271.00	636.45	2.35	-0.24	0.018
98.75	-5.30	-0.61	0.00	-6.64	0.00	6.64	1,298.85	649.43	1,171.84	586.79	2.55	-0.25	0.015
100.00	-2.90	-0.37	0.00	-5.88	0.00	5.88	1,281.00	640.50	1,139.67	570.68	2.61	-0.25	0.013
102.00	-2.73	-0.35	0.00	-5.14	0.00	5.14	915.93	457.96	815.42	408.32	2.72	-0.26	0.016
105.00	-2.44	-0.32	0.00	-4.08	0.00	4.08	894.26	447.13	769.22	385.18	2.88	-0.26	0.013
110.00	-2.17	-0.29	0.00	-2.48	0.00	2.48	856.75	428.37	693.99	347.51	3.16	-0.27	0.010
115.00	-1.96	-0.26	0.00	-1.04	0.00	1.04	817.50	408.75	621.20	311.06	3.44	-0.27	0.006
119.00	0.00	-0.25	0.00	0.00	0.00	0.00	776.64	388.32	559.00	279.91	3.66	-0.27	0.000

### Equivalent Modal Forces Analysis

(Based on ASCE7-10 Chapters 11, 12 & 15 and ANSI/TIA-G, section 2.7)

Spectral Response Acceleration for Short Period ( $S_s$ ):	0.18
Spectral Response Acceleration at 1.0 Second Period ( $S_1$ ):	0.06
Importance Factor ( $I_E$ ):	1.00
Site Coefficient $F_a$ :	1.60
Site Coefficient $F_v$ :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period ( $S_{ds}$ ):	0.19
Design Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.10
Period Based on Rayleigh Method (sec):	1.81
Redundancy Factor ( $\rho$ ):	1.30

### Load Case (1.2 + 0.2Sds) \* DL + E EMAM      Seismic Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
28	117.00	244	1.827	1.664	1.024	0.330	70	302
27	112.50	316	1.689	1.082	0.798	0.249	68	392
26	107.50	329	1.542	0.611	0.595	0.171	49	407
25	103.50	203	1.430	0.342	0.463	0.119	21	251
24	101.00	254	1.361	0.215	0.393	0.090	20	314
23	99.38	177	1.318	0.146	0.352	0.073	11	219
22	96.88	366	1.253	0.060	0.296	0.050	16	454
21	92.50	503	1.142	-0.043	0.214	0.017	7	622
20	87.50	519	1.022	-0.104	0.142	-0.010	-4	643
19	82.50	535	0.908	-0.122	0.091	-0.023	-11	663
18	77.50	552	0.802	-0.112	0.054	-0.026	-12	683
17	72.50	568	0.702	-0.087	0.030	-0.019	-9	703
16	67.50	584	0.608	-0.056	0.015	-0.005	-3	724
15	62.50	601	0.521	-0.024	0.008	0.011	6	744
14	57.50	617	0.441	0.005	0.006	0.026	14	764
13	54.13	220	0.391	0.021	0.007	0.034	6	272
12	51.63	774	0.356	0.031	0.008	0.039	26	959
11	49.25	363	0.324	0.040	0.010	0.042	13	449
10	46.75	532	0.292	0.047	0.013	0.044	20	658
9	42.50	777	0.241	0.057	0.018	0.047	31	962
8	37.50	797	0.188	0.064	0.025	0.047	33	987
7	32.50	818	0.141	0.069	0.031	0.046	33	1,013
6	27.50	838	0.101	0.071	0.037	0.045	32	1,038
5	22.50	859	0.068	0.072	0.041	0.043	32	1,063
4	17.50	879	0.041	0.070	0.042	0.041	31	1,089
3	12.50	900	0.021	0.065	0.038	0.037	29	1,114
2	7.50	920	0.008	0.051	0.029	0.030	24	1,139
1	2.50	940	0.001	0.022	0.012	0.014	12	1,165
Raycap DC6-48-60-18-	119.00	60	1.890	1.980	1.140	0.370	19	74
Ericsson RRUS 11 (w/	119.00	675	1.890	1.980	1.140	0.370	217	836
Andrew SBNH-1D6565C	119.00	793	1.890	1.980	1.140	0.370	255	982
Round T-Arm	119.00	750	1.890	1.980	1.140	0.370	241	929
Alcatel-Lucent RRH2x	100.00	132	1.335	0.171	0.368	0.079	9	163
Alcatel-Lucent RRH2x	100.00	170	1.335	0.171	0.368	0.079	12	211

Site Number: 283422

Code: ANSI/TIA-222-G

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Site Name: SHORT BEACH BRANFORD CT, CEEngineering Number:OAA641909\_C3\_02

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Customer: VERIZON WIRELESS

Alcatel-Lucent PCS B	100.00	165	1.335	0.171	0.368	0.079	11	204
RFS DB-T1-6Z-8AB-0Z	100.00	88	1.335	0.171	0.368	0.079	6	109
Antel BXA-70063-6CF-	100.00	51	1.335	0.171	0.368	0.079	4	63
Andrew LNX-6514DS-A1	100.00	115	1.335	0.171	0.368	0.079	8	143
Commscope SBNHH-	100.00	304	1.335	0.171	0.368	0.079	21	377
Round Low Profile PI	100.00	1,500	1.335	0.171	0.368	0.079	103	1,858
		20,788	36.974	13.547	12.294	3.679	1,470	25,744

**Load Case (0.9 - 0.2Sds) \* DL + E EMAM Seismic (Reduced DL) Equivalent Modal Analysis Method**

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
28	117.00	244	1.827	1.664	1.024	0.330	70	210
27	112.50	316	1.689	1.082	0.798	0.249	68	273
26	107.50	329	1.542	0.611	0.595	0.171	49	283
25	103.50	203	1.430	0.342	0.463	0.119	21	175
24	101.00	254	1.361	0.215	0.393	0.090	20	219
23	99.38	177	1.318	0.146	0.352	0.073	11	152
22	96.88	366	1.253	0.060	0.296	0.050	16	316
21	92.50	503	1.142	-0.043	0.214	0.017	7	433
20	87.50	519	1.022	-0.104	0.142	-0.010	-4	447
19	82.50	535	0.908	-0.122	0.091	-0.023	-11	461
18	77.50	552	0.802	-0.112	0.054	-0.026	-12	475
17	72.50	568	0.702	-0.087	0.030	-0.019	-9	489
16	67.50	584	0.608	-0.056	0.015	-0.005	-3	503
15	62.50	601	0.521	-0.024	0.008	0.011	6	518
14	57.50	617	0.441	0.005	0.006	0.026	14	532
13	54.13	220	0.391	0.021	0.007	0.034	6	189
12	51.63	774	0.356	0.031	0.008	0.039	26	667
11	49.25	363	0.324	0.040	0.010	0.042	13	312
10	46.75	532	0.292	0.047	0.013	0.044	20	458
9	42.50	777	0.241	0.057	0.018	0.047	31	669
8	37.50	797	0.188	0.064	0.025	0.047	33	687
7	32.50	818	0.141	0.069	0.031	0.046	33	705
6	27.50	838	0.101	0.071	0.037	0.045	32	722
5	22.50	859	0.068	0.072	0.041	0.043	32	740
4	17.50	879	0.041	0.070	0.042	0.041	31	757
3	12.50	900	0.021	0.065	0.038	0.037	29	775
2	7.50	920	0.008	0.051	0.029	0.030	24	793
1	2.50	940	0.001	0.022	0.012	0.014	12	810
Raycap DC6-48-60-18-	119.00	60	1.890	1.980	1.140	0.370	19	52
Ericsson RRUS 11 (w/	119.00	675	1.890	1.980	1.140	0.370	217	582
Andrew SBNH-1D6565C	119.00	793	1.890	1.980	1.140	0.370	255	683
Round T-Arm	119.00	750	1.890	1.980	1.140	0.370	241	646
Alcatel-Lucent RRH2x	100.00	132	1.335	0.171	0.368	0.079	9	114
Alcatel-Lucent RRH2x	100.00	170	1.335	0.171	0.368	0.079	12	147
Alcatel-Lucent PCS B	100.00	165	1.335	0.171	0.368	0.079	11	142
RFS DB-T1-6Z-8AB-0Z	100.00	88	1.335	0.171	0.368	0.079	6	76
Antel BXA-70063-6CF-	100.00	51	1.335	0.171	0.368	0.079	4	44
Andrew LNX-6514DS-A1	100.00	115	1.335	0.171	0.368	0.079	8	99
Commscope SBNHH-	100.00	304	1.335	0.171	0.368	0.079	21	262
Round Low Profile PI	100.00	1,500	1.335	0.171	0.368	0.079	103	1,292
		20,788	36.974	13.547	12.294	3.679	1,470	17,911

Load Case (1.2 + 0.2Sds) \* DL + E EMAM Seismic Equivalent Modal Analysis Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-24.58	-1.46	0.00	-144.35	0.00	144.35	2,946.72	1,473.36	5,500.90	2,754.54	0.00	0.00	0.061
5.00	-23.44	-1.44	0.00	-137.05	0.00	137.05	2,899.79	1,449.90	5,267.87	2,637.85	0.01	-0.02	0.060
10.00	-22.32	-1.42	0.00	-129.83	0.00	129.83	2,851.12	1,425.56	5,036.47	2,521.98	0.04	-0.03	0.059
15.00	-21.24	-1.40	0.00	-122.72	0.00	122.72	2,800.72	1,400.36	4,806.98	2,407.06	0.08	-0.05	0.059
20.00	-20.17	-1.37	0.00	-115.74	0.00	115.74	2,748.57	1,374.29	4,579.65	2,293.23	0.15	-0.07	0.058
25.00	-19.13	-1.34	0.00	-108.89	0.00	108.89	2,694.69	1,347.35	4,354.74	2,180.61	0.23	-0.09	0.057
30.00	-18.12	-1.31	0.00	-102.18	0.00	102.18	2,639.07	1,319.54	4,132.51	2,069.33	0.34	-0.11	0.056
35.00	-17.13	-1.29	0.00	-95.61	0.00	95.61	2,581.72	1,290.86	3,913.23	1,959.52	0.46	-0.13	0.055
40.00	-16.17	-1.26	0.00	-89.18	0.00	89.18	2,522.63	1,261.31	3,697.16	1,851.33	0.61	-0.15	0.055
45.00	-15.51	-1.24	0.00	-82.89	0.00	82.89	2,461.80	1,230.90	3,484.55	1,744.87	0.78	-0.17	0.054
48.50	-15.06	-1.23	0.00	-78.54	0.00	78.54	2,418.18	1,209.09	3,337.93	1,671.45	0.91	-0.19	0.053
50.00	-14.10	-1.20	0.00	-76.70	0.00	76.70	2,399.23	1,199.61	3,275.68	1,640.27	0.97	-0.20	0.053
53.25	-13.83	-1.20	0.00	-72.79	0.00	72.79	1,780.50	890.25	2,418.90	1,211.25	1.11	-0.21	0.068
55.00	-13.07	-1.19	0.00	-70.69	0.00	70.69	1,765.87	882.93	2,368.02	1,185.77	1.19	-0.22	0.067
60.00	-12.32	-1.18	0.00	-64.77	0.00	64.77	1,722.87	861.43	2,223.96	1,113.63	1.44	-0.25	0.065
65.00	-11.60	-1.19	0.00	-58.85	0.00	58.85	1,678.13	839.06	2,082.05	1,042.57	1.71	-0.27	0.063
70.00	-10.89	-1.20	0.00	-52.91	0.00	52.91	1,631.65	815.83	1,942.57	972.73	2.01	-0.30	0.061
75.00	-10.21	-1.21	0.00	-46.92	0.00	46.92	1,583.44	791.72	1,805.76	904.22	2.34	-0.33	0.058
80.00	-9.55	-1.22	0.00	-40.85	0.00	40.85	1,533.49	766.75	1,671.90	837.19	2.71	-0.36	0.055
85.00	-8.90	-1.23	0.00	-34.73	0.00	34.73	1,481.81	740.90	1,541.24	771.77	3.10	-0.39	0.051
90.00	-8.28	-1.22	0.00	-28.58	0.00	28.58	1,423.78	711.89	1,409.49	705.79	3.53	-0.42	0.046
95.00	-7.83	-1.21	0.00	-22.48	0.00	22.48	1,352.39	676.20	1,271.00	636.45	3.98	-0.44	0.041
98.75	-7.61	-1.19	0.00	-17.96	0.00	17.96	1,298.85	649.43	1,171.84	586.79	4.33	-0.46	0.036
100.00	-4.17	-0.97	0.00	-16.46	0.00	16.46	1,281.00	640.50	1,139.67	570.68	4.45	-0.47	0.032
102.00	-3.91	-0.95	0.00	-14.52	0.00	14.52	915.93	457.96	815.42	408.32	4.65	-0.48	0.040
105.00	-3.51	-0.90	0.00	-11.67	0.00	11.67	894.26	447.13	769.22	385.18	4.95	-0.49	0.034
110.00	-3.12	-0.83	0.00	-7.17	0.00	7.17	856.75	428.37	693.99	347.51	5.48	-0.51	0.024
115.00	-2.81	-0.76	0.00	-3.03	0.00	3.03	817.50	408.75	621.20	311.06	6.01	-0.52	0.013
119.00	0.00	-0.73	0.00	0.00	0.00	0.00	776.64	388.32	559.00	279.91	6.45	-0.52	0.000

Load Case (0.9 - 0.2Sds) \* DL + E EMAM Seismic (Reduced DL) Equivalent Modal Analysis Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-17.10	-1.46	0.00	-142.80	0.00	142.80	2,946.72	1,473.36	5,500.90	2,754.54	0.00	0.00	0.058
5.00	-16.31	-1.44	0.00	-135.50	0.00	135.50	2,899.79	1,449.90	5,267.87	2,637.85	0.01	-0.02	0.057
10.00	-15.53	-1.42	0.00	-128.30	0.00	128.30	2,851.12	1,425.56	5,036.47	2,521.98	0.04	-0.03	0.056
15.00	-14.77	-1.39	0.00	-121.22	0.00	121.22	2,800.72	1,400.36	4,806.98	2,407.06	0.08	-0.05	0.056
20.00	-14.03	-1.36	0.00	-114.27	0.00	114.27	2,748.57	1,374.29	4,579.65	2,293.23	0.15	-0.07	0.055
25.00	-13.31	-1.33	0.00	-107.47	0.00	107.47	2,694.69	1,347.35	4,354.74	2,180.61	0.23	-0.09	0.054
30.00	-12.61	-1.30	0.00	-100.81	0.00	100.81	2,639.07	1,319.54	4,132.51	2,069.33	0.33	-0.11	0.053
35.00	-11.92	-1.27	0.00	-94.29	0.00	94.29	2,581.72	1,290.86	3,913.23	1,959.52	0.46	-0.13	0.053
40.00	-11.25	-1.24	0.00	-87.93	0.00	87.93	2,522.63	1,261.31	3,697.16	1,851.33	0.60	-0.15	0.052
45.00	-10.79	-1.23	0.00	-81.71	0.00	81.71	2,461.80	1,230.90	3,484.55	1,744.87	0.77	-0.17	0.051
48.50	-10.48	-1.21	0.00	-77.42	0.00	77.42	2,418.18	1,209.09	3,337.93	1,671.45	0.90	-0.19	0.051
50.00	-9.81	-1.19	0.00	-75.60	0.00	75.60	2,399.23	1,199.61	3,275.68	1,640.27	0.96	-0.19	0.050
53.25	-9.62	-1.18	0.00	-71.74	0.00	71.74	1,780.50	890.25	2,418.90	1,211.25	1.10	-0.21	0.065
55.00	-9.09	-1.17	0.00	-69.67	0.00	69.67	1,765.87	882.93	2,368.02	1,185.77	1.18	-0.22	0.064
60.00	-8.57	-1.17	0.00	-63.83	0.00	63.83	1,722.87	861.43	2,223.96	1,113.63	1.42	-0.24	0.062
65.00	-8.07	-1.17	0.00	-58.00	0.00	58.00	1,678.13	839.06	2,082.05	1,042.57	1.69	-0.27	0.060
70.00	-7.58	-1.18	0.00	-52.15	0.00	52.15	1,631.65	815.83	1,942.57	972.73	1.99	-0.30	0.058
75.00	-7.10	-1.19	0.00	-46.25	0.00	46.25	1,583.44	791.72	1,805.76	904.22	2.31	-0.33	0.056
80.00	-6.64	-1.20	0.00	-40.28	0.00	40.28	1,533.49	766.75	1,671.90	837.19	2.67	-0.36	0.052
85.00	-6.19	-1.21	0.00	-34.26	0.00	34.26	1,481.81	740.90	1,541.24	771.77	3.06	-0.38	0.049
90.00	-5.76	-1.20	0.00	-28.21	0.00	28.21	1,423.78	711.89	1,409.49	705.79	3.48	-0.41	0.044
95.00	-5.44	-1.19	0.00	-22.20	0.00	22.20	1,352.39	676.20	1,271.00	636.45	3.92	-0.44	0.039
98.75	-5.29	-1.17	0.00	-17.76	0.00	17.76	1,298.85	649.43	1,171.84	586.79	4.28	-0.45	0.034
100.00	-2.90	-0.96	0.00	-16.29	0.00	16.29	1,281.00	640.50	1,139.67	570.68	4.40	-0.46	0.031
102.00	-2.72	-0.94	0.00	-14.36	0.00	14.36	915.93	457.96	815.42	408.32	4.59	-0.47	0.038
105.00	-2.44	-0.89	0.00	-11.54	0.00	11.54	894.26	447.13	769.22	385.18	4.89	-0.48	0.033
110.00	-2.17	-0.82	0.00	-7.09	0.00	7.09	856.75	428.37	693.99	347.51	5.40	-0.50	0.023
115.00	-1.96	-0.75	0.00	-2.99	0.00	2.99	817.50	408.75	621.20	311.06	5.93	-0.51	0.012
119.00	0.00	-0.73	0.00	0.00	0.00	0.00	776.64	388.32	559.00	279.91	6.36	-0.52	0.000

Site Number: 283422

Code: ANSI/TIA-222-G

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Site Name: SHORT BEACH BRANFORD CT, CEEngineering Number:OAA641909\_C3\_02

6/29/2017 11:31:56 AM

Customer: VERIZON WIRELESS

### Analysis Summary

Load Case	Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	20.66	0.00	24.91	0.00	0.00	1835.11	53.25	0.69
0.9D + 1.6W	20.65	0.00	18.67	0.00	0.00	1819.54	53.25	0.68
1.2D + 1.0Di + 1.0Wi	5.22	0.00	40.50	0.00	0.00	448.86	53.25	0.18
(1.2 + 0.2Sds) * DL + E ELFM	0.97	0.00	24.58	0.00	0.00	92.85	53.25	0.04
(1.2 + 0.2Sds) * DL + E EMAM	1.46	0.00	24.58	0.00	0.00	144.35	53.25	0.07
(0.9 - 0.2Sds) * DL + E ELFM	0.97	0.00	17.10	0.00	0.00	91.92	53.25	0.04
(0.9 - 0.2Sds) * DL + E EMAM	1.46	0.00	17.10	0.00	0.00	142.80	53.25	0.06
1.0D + 1.0W	4.55	0.00	20.79	0.00	0.00	402.96	53.25	0.16

Site Number: 283422

Code: ANSI/TIA-222-G

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Site Name: SHORT BEACH BRANFORD CT, CEEngineering Number:OAA641909\_C3\_02

6/29/2017 11:31:56 AM

Customer: VERIZON WIRELESS

### Base Summary

#### Reactions

Original Design			Analysis			
Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment Design %
2,678.30	28.60	30.21	1,835.11	40.50	20.66	68.52

#### Base Plate

Yield (ksi)	Thick (in)	Width (in)	Style	Poly Sides	Clip Len (in)	Effective Len (in)	Mu (kip-in)	Phi Mn (kip-in)	Ratio
50.0	2.500	50.250	Clipped	0	9.00	8.453	351.43	594.32	0.59

#### Anchor Bolts

Bolt Circle	Num Bolts	Bolt Type	Bolt Dia (in)	Yield (ksi)	Ultimate (ksi)	Arrange	Cluster Dist (in)	Start Angle (deg)	Compression			Tension		
									Force (kip)	Allow (kip)	Ratio	Force (kip)	Allow (kip)	Ratio
51.75	12	2.25" 18J	2.25	75.00	100.00	Clustered	6.00	45.0	145.22	260.00	0.57	138.47	260.00	0.55

# **ATTACHMENT 4**

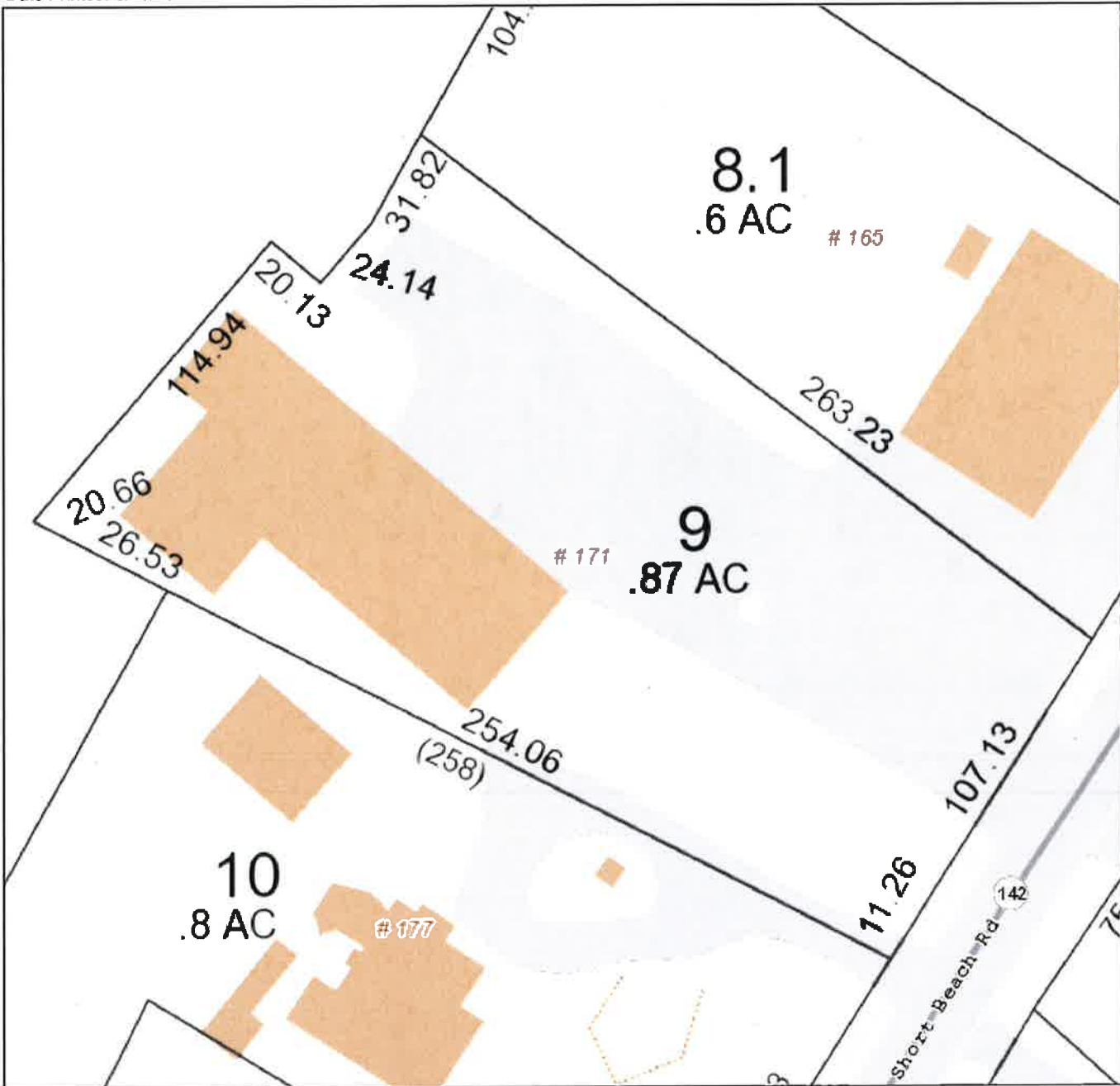


# Town of Branford

Geographic Information System (GIS)

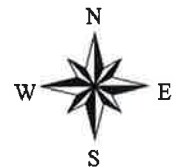


Date Printed: 6/26/2017



### MAP DISCLAIMER - NOTICE OF LIABILITY

This map is for assessment purposes only. It is not for legal description or conveyances. All information is subject to verification by any user. The Town of Branford and its mapping contractors assume no legal responsibility for the information contained herein.



TOPO.	UTILITIES	STRT. ROAD	LOCATION	DESCRIPTION	Code	Appraised Value	Assessed Value
Level	2 Public Water	1 Paved	2 Suburban	IND LAND	3-1	101,500	71,100
	3 Public Sewer			IND BLDG	3-2	204,500	143,100
				IND IMPR	3-3	20,500	14,300
				UTL LAND	4-1	200,000	140,000

**RECORD OF OWNERSHIP**

Other ID: C10/000/002/00009/

CONDO BLDG  
 CONDO UNIT  
 CONDO FLOOR

PARCEL DESC  
 GIS ID: C10/000/002/00009/

HLDDG TK  
 SEPTIC  
 SEWER  
 DISTRICT  
 CENSUS TR 1843

ASSOC PID#

**EXEMPTIONS**

Year	Type	Description	Amount	Code	Description	Number	Amount	Comm. Int.
			0960/0925	Q	I	380,000		
			0640/0284					
			0475/0297					

**OTHER ASSESSMENTS**

Yr.	Code	Assessed Value	Yr.	Code	Assessed Value	Yr.	Code	Assessed Value
2016	3-1	71,100	2015	3-1	71,100	2014	3-1	71,100
2016	3-2	143,100	2015	3-2	143,100	2014	3-2	143,100
2016	3-3	14,300	2015	3-3	14,300	2014	3-3	14,300
2016	4-1	140,000	2015	4-1	140,000	2014	4-1	140,000

**ASSESSING NEIGHBORHOOD**

Street Index Name

Tracing

Batch

**NOTES**

V1162P583 FILED 8/29/14  
 BOUNDARY LINE AGREEMENT  
 SMAP 3769 FILED 8/29/14

**BUILDING PERMIT RECORD**

Permit ID	Issue Date	Type	Description	Amount	Insp. Date	% Comp.	Date Comp.	Comments	Date	ID	Cd.	Purpose/Result
00247-2013	04/28/2014	CO	ISSUED	0	10/21/2014	100		INSTALL 120' TELECC	10/21/2014	DV	37	Bldg Permit
14-00070-1	02/10/2014	CM	Commercial	4,500	10/21/2014	100		TIE IN FEEDER TO PR08/01/2014		JG	11	Field Review
14-00070	02/07/2014	CM	Commercial	50,000	10/21/2014	100		ANTENNAS (12) ON EX07/16/2014		GM	37	Bldg Permit
00495-2013	01/30/2014	CM	Commercial	0	10/21/2014	100		ATTACH ANTENNAS 10/13/2014		BT	37	Bldg Permit
13-00495-3	11/18/2013	CM	Commercial	3,500	10/21/2014	100		RUN GAS PIPE FROM 10/22/2009		KC	16	Reval Review
13-00495-2	10/01/2013	CM	Commercial	4,900	10/21/2014	100		CELL TOWER GAS PI				
13-00495-1	07/24/2013	EL	Electric	6,000	10/21/2014	100		INSTALL ELECTRIC 1				

**LAND LINE VALUATION SECTION**

ST.	Acres	I. Factor	S.A.	% Comp.	Date Comp.	C. Factor	Disc	Adj.	ST.
0	1.00000	2.6165	5	1.00000		1.00	0050	1.00	0050
0	1.00000	0	0	1.00000		0.50	1.00	0.00000	0.00000
1.00	200,000.00	1.00	N			1.00	0.00000		

**APPRaised VALUE SUMMARY**

Appraised Bldg. Value (Card) 202,200  
 Appraised XF (B) Value (Bldg) 2,300  
 Appraised OB (L) Value (Bldg) 20,500  
 Appraised Land Value (Bldg) 301,500  
 Special Land Value 0  
 Total Appraised Parcel Value 526,500  
 Valuation Method: C  
 Adjustment: 0  
 Net Total Appraised Parcel Value 526,500

**VISIT/ CHANGE HISTORY**

Permit ID	Issue Date	Type	IS	IS	Type	Date	IS	IS	Type	Date	IS	IS	Type	Date
00247-2013	04/28/2014	CO	ISSUED			10/21/2014								
14-00070-1	02/10/2014	CM	Commercial			10/21/2014								
14-00070	02/07/2014	CM	Commercial			10/21/2014								
00495-2013	01/30/2014	CM	Commercial			10/21/2014								
13-00495-3	11/18/2013	CM	Commercial			10/21/2014								
13-00495-2	10/01/2013	CM	Commercial			10/21/2014								
13-00495-1	07/24/2013	EL	Electric			10/21/2014								

**CONSTRUCTION DETAIL (CONTINUED)**

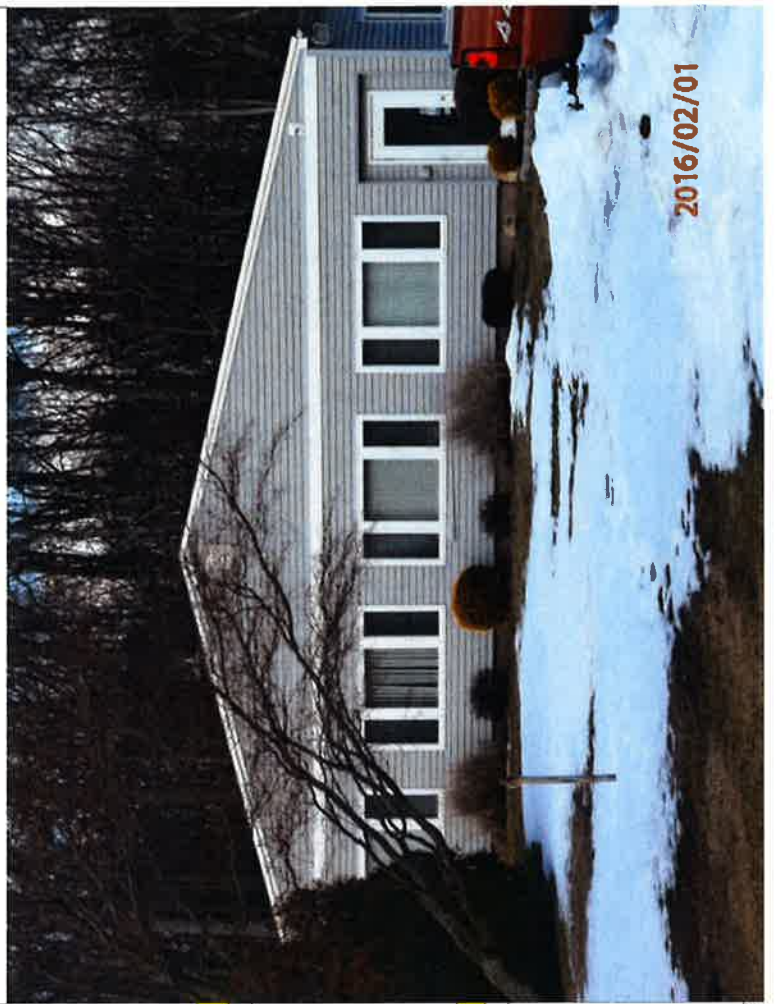
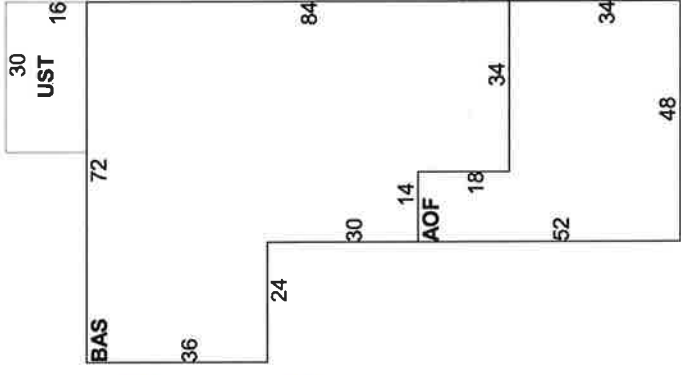
Element	Cd.	Ch.	Description
Style	40		Lt. Industrial
Model	96		Ind/Comm
Grade	03		C
Stories	1		
Occupancy	1		
Exterior Wall 1	15		Concr/Cinder
Exterior Wall 2	25		Vinyl Siding
Roof Structure	03		Gable/Hip
Roof Cover	03		Asphalt
Interior Wall 1	01		Minim/Masonry
Interior Wall 2			
Interior Floor 1	03		Concr-Finished
Interior Floor 2	05		Vinyl/Asphalt
Heating Fuel	03		Gas
Heating Type	04		Forced Air-Duc
AC Type	02		Heat Pump
Bldg Use	4000		MFRG MDL96
Total Rooms			
Total Bedrms	00		
Total Baths	0		
Heat/AC	02		HEAT/AC SPLIT
Frame Type	03		MASONRY
Baths/Plumbing	02		AVERAGE
Ceiling/Wall	04		CEIL & MIN WL
Rooms/Prtns	02		AVERAGE
Wall Height	10		
% Conn Wall	0		

**OB-OUTBUILDING & YARD ITEMS(L) / XF-BUILDING EXTRA FEATURES(B)**

Code	Description	Sub	Unit	Price	Yr	Gde	Dp	Rt	Cnd	%Cnd	Apr Value
PAV1	PAVING-ASPH	L	4,000	1.65	2009	0	50			50	3,300
PAV2	PAVING-CON	L	600	3.30	2013	0	100			100	2,000
SHD6	SHED COM M	L	240	22.00	2013	0	100			100	5,300
SHD6	SHED COM M	L	360	22.00	2013	0	100			100	7,900
FN9	W/O TOP RL-4	L	200	9.90	2013	0	100			100	2,000
A/C	AIR CONDITI	B	1,884	2.20	1979	1	100			100	2,300

**BUILDING SUB-AREA SUMMARY SECTION**

Code	Description	Living Area	Gross Area	Eff. Area	Unit Cost	Undeprac. Value
AOF	Office	1,884	1,884	2,355	64.56	121,636
BAS	First Floor	4,644	4,644	4,644	51.65	239,863
UST	Utility, Storage, Unfinished	0	480	120	12.91	6,198
<b>Ttl. Gross Liv/Lease Area:</b>					<b>7,008</b>	<b>367,696</b>



# **ATTACHMENT 5**



# Certificate of Mailing — Firm

Name and Address of Sender

Kenneth C. Baldwin, Esq.  
Robinson & Cole LLP  
280 Trumbull Street  
Hartford, CT 06103

TOTAL NO.  
of Pieces Listed by Sender

3

TOTAL NO.  
of Pieces Received at Post Office™

3

Postmaster, per (name of receiving employee)

*[Signature]*

Affix Stamp Here  
Postmark with Date of Receipt.

neopost  
09/18/2017  
**US POSTAGE \$002.38**  
ZIP 06108  
0411120000

USPS® Tracking Number  
Firm-specific Identifier

Address  
(Name, Street, City, State, and ZIP Code™)

Postage

Fee

Special Handling

Parcel Airlift

1.

James B. Cosgrove, First Selectman  
Town of Branford  
1019 Main Street  
Branford, CT 06405

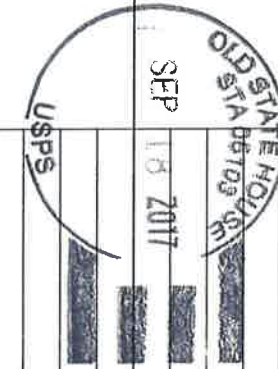
2.

Harry Smith, Town Planner  
Town of Branford  
1019 Main Street  
Branford, CT 06405

3.

171 Short Beach Road Realty LLC  
171 Short Beach Road  
Branford, CT 06405

4.



5.

6.